DOCUMENT RESUME

ED 159 256 UD 018 515

TITLE	An Evaluation of the Response to Educational Needs Project (RENP). Volume II: Technical Appendices.
INSTITUTION	Gibboney (Richard A.) Associates, Inc., Kensington, Md.
SPONS AGENCY	National Inst. of Education (DHEW), Washington, D.C.
PUB DATE	Apr 78
NOTE	291p.; Not available in hard copy due to marginal legibility of the original document; For related documents, see UD 018 507-514
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	*Achievement Gains; Comparative Analysis; *Compensatory Education Programs; Cost Effectiveness; Elementary Education; Mathematics; *Program Descriptions; *Program Evaluation; Reading Achievement; *Statistical Data; Teacher Evaluation
IDENTIFIERS	*District of Columbia; *Response to Educational Needs Project

ABSTRACT

These technical appendices give the following information: a comparison of RENP and non-RENP mean Comprehensive Test of Basic Skills (CTBS) Fall 1976 pretest scores; evidence of the existence of an achievement gap between Washington, D.C. and large city norms; number and percentages of students in each of three pretest achievement levels; prescriptive reading and mathematics test score results for Fall 1976 and Spring 1977; results of output from split-plot analysis of covariance; analyses using a chi-square approach to compare the number of RENP and non-RENP students and their patterns of gains and losses from Fall 1976 to Spring 1977; description of gains/losses obtained on the RENP program for each grade; means and standard deviations for pre and post test raw scores and reading and mathematics total scores by grade and achievement level for RENP, non-RENP, and total samples; teacher classroom observation and interview instruments; definition of variables describing classroom activities, materials, and interactions; results of the analysis of variance of teacher observation data; means and standard deviations of variables describing classroom activities, materials, and interactions by grade for RENP, non-RENP, and total samples; and cost methodology of RENP. (Author/MC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED159256

AN EVALUATION OF THE RESPONSE TO EDUCATIONAL NEEDS PROJECT (RENP)

Volume II: Technical Appendices

By

Richard A. Gibboney Associates, Inc.
Blue Bell, Pennsylvania

April 1978

Submitted to the

U.S. Department of Health, Education and Welfare
National Institute of Education
Washington, D.C. 20208

UD018515

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

TABLE OF CONTENT

APPENDIX A

Comparison of RENP and Non-RENP Mean CTBS Fall 1976 Pretest Scores Using Classrooms and Students Within Those Classrooms as the Unit of Analysis

APPENDIX B

Evidence of the Existence of an Achievement Gap Between Washington, D. C. and Large City Norms

APPENDIX C

Numbers and Percentages of Students in Each of Three Pretest Achievement Levels ((Fall 1976 to Spring 1977 Analyses))

APPENDIX D

Prescriptive Reading and Math Test Score Results for Fall 1976 and Spring 1977

APPENDIX E

Results of Output from Split-plot Analysis of Covariance Using (Fall 1976) Pretest CTBS Raw Scores as the Covariate and (the Following Spring 1977) Posttest Raw Scores as Dependent Variables.

APPENDIX F

Results of Output from Split-plot Analyses of Variance Using the Following Growth Scores from Fall 1976 to Spring 1977 as the Dependent Variables

APPENDIX G

Results of Descriptive Analyses Using a Chi-square Approach to Compare the Number of RENP and Non-RENP Students and Their Patterns of Gains and Losses from Fall 1976 to Spring 1977.

APPENDIX H

Description of Gains/Losses Obtained on the RENP Program for Each Grade

APPENDIX I

Numbers and Percentages of Students in Each of Three Pretest Achievement Levels ((Fall 1976 to Spring 1977 to Fall 1977))

APPENDIX J

Mean and Standard Deviations for Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, Non-RENP and Total Samples

APPENDIX K

CTBS Reading and Math Total Scores: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, Non-RENP and Total Samples

APPENDIX L

Teacher Classroom Observation and Interview Instruments

APPENDIX M

Definition of Variables Describing Classroom Activities, Materials and Interactions

APPENDIX N

Results of Analysis of Variance of Teacher Observation Data

APPENDIX O

Means and Standard Deviations of Variables Describing Classroom Activities, Materials and Interactions -- for Grades 4, 5, 6 and 8 Combined by RENP, Non-RENP and Total Group

APPENDIX P

Means and Standard Deviations of Variables Describing Classroom Activities, Materials and Interactions by Grade for RENP, Non-RENP and Total Group

APPENDIX Q

Cost Methodology (Extracted From RMC Research Corportation, Report UR-322, 1977)

AUTHOR'S NOTE:

For the RENP evaluation an alpha level of .10 was set a priori as an acceptable level of confidence to be considered statistically significant. The alpha level indicates the amount of Type I error that one expects to find, i.e., the number of times in 100 that one expects to reject the null hypothesis when in fact it is true. Traditionally, an alpha level of .01 or .05 has been used. The .01 and .05 levels of confidence are particularly important in medical research where the researcher must be careful not to state that a particular treatment (usually associated with considerable risks) "works" unless there is a very high probability that the effects are real.

A primary factor in setting a .10 alpha level was to give RENP every possible chance to show an effect. Doing this implied that we were willing to increase tht probability of a Type I error. It had an added effect, however, of decreasing the probability of Type II error, Type II error being defined as the probability of accepting the null hypothesis, when in fact there is a real difference.

In summary, Gibboney Associates used a .10 level of confidence as statistically significant to ensure that RENP would get a "fair" trial, that is, a chance to demonstrate effects if they were indeed present.

APPENDIX A

Comparison of RENP and NON-RENP Mean CTBS Fall 1976 Pretest Scores Using Classrooms and Students Within Those Classrooms as the Unit of Analysis

Table A.1 Comparisons of RENP and NON-RENP Classroom Means on CTBS Fall 1976 Pretest Scores

	RENP Classrooms			NON-RENP Classrooms			t-value
	N	Mean	SD	N	Mean	SD	
Grade							
ding Total	5	37.1	5.10	5	39.3	7.74	.48
ocabulary	5	18.2	2.39	5	18.5	4.05	.114
omprehension	5	18.9	2.91	5	21.1	3.98	.86
h Total	5	56.0	6.65	5	56.0	4.55	1.24
omputation	5	26.4	4.49	5	28.8	3.06	.89
oncept	5	15.0	1.86	5	15.5	1.68	.45
Applications	5	9.9	1.15	5	12.1	1.52	2.36*
Grade							
ading Total	6	28.8	2.30	3	29.3	4.47	.16
Vocabulary	6	13.6	1.48	3	13.1	2.37	.55
Comprehension	6	15.1	1.40	3	16.2	2.12	.67
th Total	6	36.3	2.82	3	37.3	4.00	.31
Computation	6	19.3	1.53	3	19.9	2.16	.35
Concept	6	10.3	1.31	3	9.8	1.18	.43
Applications	6	8.0	1.07	3	8.2	.41	.31
h Grade							
ading Total	5	40.0	10.67	7	37.2	9.65	.42
Vocabulary	5	19.0	5.61	7	17.1	5.04	.40
Comprehension	5	20.9	5.07	7	19.7	4.68	.56
th Total	5	47.2	8.10	7	47.4	8.31	.04
Computation	5	25.8	4.77	7	26.1	3.62	.13
Concept	5	11.7	1.44	7	11.6	2.14	.06
Applications	5	9.9	2.29	7	9.7	2.95	.08
h Grade							
eading Total	8	32.8	2.16	7	34.4	5.02	.76
Vocabulary	8	15.8	1.24	7	15.5	2.21	.23
Comprehension	8	17.0	1.58	7	18.8	2.89	1.37*
ath Total	8	33.0	2.49	7	30.8	5.91	.85
Computation	8	15.9	1.28	7	16.3	2.78	.35
Concept	8	9.3	.61	7	9.7	1.41	.59
Applications	8	8.1	1.04	7	6.5	2.20	1.60*

Indicates statistically significant differences between RENP and NON-RENP mean lassroom scores at $p \leq .10$ level of confidence. Since multiple t-test were conducted, he alpha level is somewhat higher than $p \leq .10$ which would be obtained for a single t-test.

Table A.2 Comparisons of RENP and NON-RENP Student Means on CTBS Fall 1976 Pretest Scores

	RENP Students			NON-RENP Students			t-value
	N	Mean	SD	N	Mean	SD	
h Grade							
ading Total	112	34.6	15.6	131	39.3	18.3	2.16*
ocabulary	112	18.2	7.4	131	18.3	8.7	.04
Comprehension	112	18.9	9.1	131	21.0	10.3	1.68*
h Total	112	50.7	16.7	131	55.8	20.2	2.15*
Computation	112	26.1	9.5	131	28.6	10.8	1.95*
Concepts	112	14.9	4.9	131	15.5	5.8	.87
Applications	110	9.8	10.9	128	11.9	6.3	1.76*
h Grade							
ading Total	146	28.6	11.8	67	29.4	13.3	.45
Vocabulary	146	13.5	6.4	67	13.1	7.6	.36
Comprehension	146	15.0	6.4	67	16.3	4.4	1.65*
th Total	147	36.4	13.7	69	37.3	11.6	.50
Computation	147	19.4	7.6	69	19.9	6.1	.54
Concepts	147	10.3	3.8	69	9.8	3.2	.88
Applications	126	7.9	4.4	64	8.2	4.0	.45
h Grade							
eading Total	118	40.3	16.9	163	37.2	17.8	1.74*
Vocabulary	118	19.5	8.7	163	17.4	8.8	1.93*
Comprehension	118	21.4	8.8	163	20.0	9.0	1.18
ath Total	113	47.2	16.7	162	48.1	16.0	.45
Computation	117	25.5	9.8	162	26.4	9.2	.74
Concepts	114	11.7	3.4	162	11.8	3.8	.05
Applications	112	9.9	5.2	161	9.9	5.3	.03
th Grade							
eading Total	228	32.9	14.5	167	34.9	15.8	1.27
Vocabulary	242	15.7	8.0	169	15.8	8.1	.07
Comprehension	240	17.0	7.9	168	19.0	8.5	2.45*
ath Total	211	32.6	12.3	168	31.5	16.2	.76
Computation	229	15.8	6.6	168	15.6	9.1	.99
Concepts	218	9.3	3.7	168	9.8	4.2	1.15
Applications	195	8.1	3.9	123	7.0	5.0	2.03*

---

*Indicates statistically significant differences between RENP and NON-RENP mean student scores at $p \leq .10$ level of confidence. Since multiple t-tests were conducted, the alpha level is somewhat higher than $p \leq .10$ which would be obtained for a single t-test.

APPENDIX B

Evidence of the Existence of an Achievement Gap Between D.C. and Large City Norms

Preliminary analyses of the CTBS pretest raw score data indicated that there was probably an achievement gap between our Washington, D. C., samples and large city norms. Figures B.1 and B.2 present the mean Reading and Math Total score percentile ranks relative to large city norms by grade for RENP and NON-RENP samples. In all instances, the mean percentile rank for the D.C. sample is below the large city 50th percentile. This same pattern exists for the Reading and Math part scores (see Table B.1)

To define the achievement gap statistically, the standard error of the raw score mean was calculated. The standard error of a mean determines how far from the population mean the sample means are likely to vary in random sampling. Thus the standard error brackets a range within which to expect the sample means. Students were used as the unit of analysis. Since there were no large discrepancies in the sample sizes for classrooms, it was assumed that the student mean was equal to the mean of the classroom means. (This was calculated and in most cases the student and class means differed only in decimal positions.) Students were, therefore, used as the unit of analysis in order to allow a direct raw score comparison of the confidence interval (mean $\pm 2\sigma_M$) and large city norm tables raw scores at the 50th percentile.

Table B.2 summarizes the probable existence of an achievement gap between the D. C. samples and large city norms for RENP and NON-RENP groups. The 95% confidence interval of $\pm 2\sigma_M$ failed to include the raw score equivalent to the 50th percentile of large city norms in all cases except for 3 out of the 56 analyses. The three exceptions were 4th grade NON-RENP Reading Comprehension and Math Concepts and 6th grade RENP Reading Comprehension where the sample mean raw scores were within $\pm 2\sigma_M$ of the raw score equivalent of the 50th percentile large city norms and thus did not illustrate an achievement gap.

Achievement gaps for the students in individual classrooms varied showing that the sampling managed to cover classrooms which were doing well compared to large city norms as well as those which were doing poorly (supportive data are on file at Gibboney Associates).

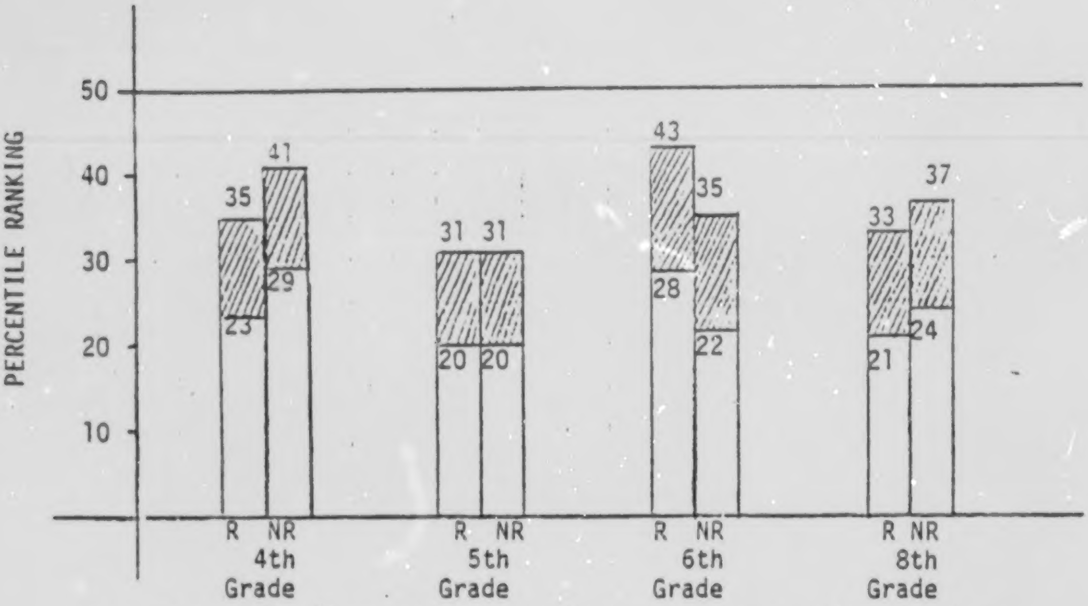

Figure B.1 CTBS READING TOTAL Score Percentile Rankings by Grade for RENP (R) and NON-RENP (NR) Groups Compared with Large City and National Norms.

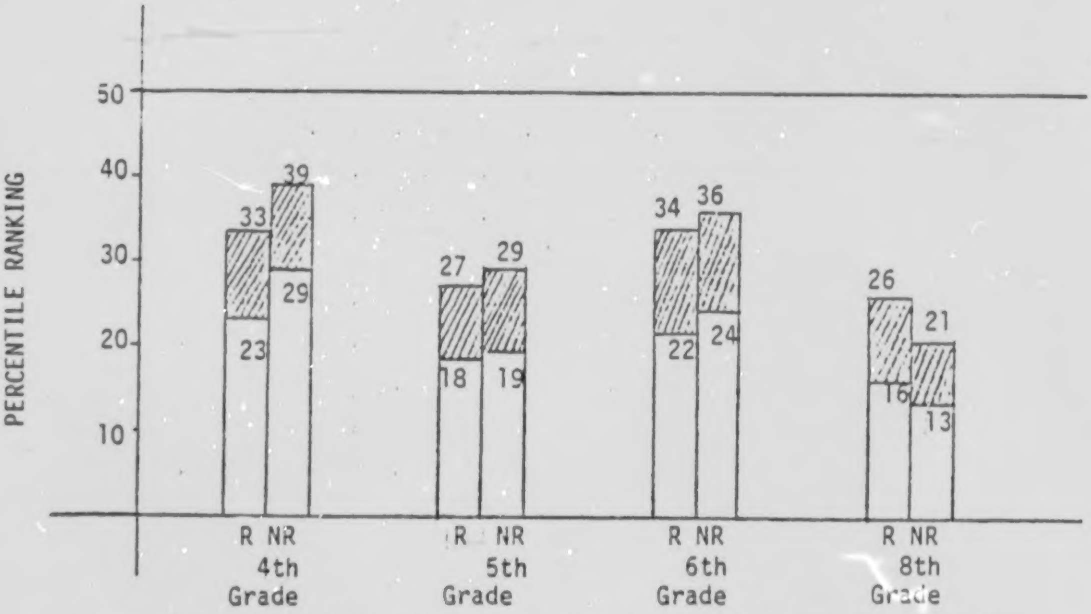

Figure B.2 CTBS MATH TOTAL Score Percentile Rankings by Grade for RENP (R) and NON-RENP (NR) Groups Compared with Large City and National Norms.

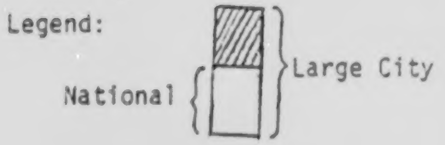

Table B.1 Description of Fall 1976 CTBS Pretest Scores for RENP and NON-RENP Samples Compared With Large City Norms

	RENP				NON-RENP			
	Number of Students	Mean Raw Score	SD	Large City Percentile	Number of Students	Mean Raw Score	SD	Large City Percentile
4th Grade								
Reading Total	112	35*	15.6	35	131	39*	18.3	41
Vocabulary	112	18*	7.4	38	131	18*	8.8	38
Comprehension	112	19*	9.1	40	131	21	10.3	45
Math Total	112	51*	16.7	33	131	56*	20.2	39
Computation	112	26*	9.5	32	131	29*	10.8	38
Concepts	112	15*	4.9	38	131	16	5.8	43
Application	110	10*	10.9	34	128	12*	6.3	42
5th Grade								
Reading Total	146	29*	11.8	31	67	29*	13.3	31
Vocabulary	146	14*	6.4	33	67	13*	7.6	29
Comprehension	146	15*	6.4	31	67	16*	4.4	36
Math Total	147	36*	13.4	27	69	37*	11.6	29
Computation	147	19*	7.5	28	69	20*	6.1	32
Concepts	147	10*	3.8	34	69	10*	3.2	34
Application	126	8*	4.4	35	64	8*	4.0	35
6th Grade								
Reading Total	118	41*	16.9	43	163	37*	17.8	35
Vocabulary	118	19*	8.8	40	163	17*	8.8	33
Comprehension	118	21	8.8	44	163	20*	9.0	40
Math Total	113	47*	16.7	34	162	48*	16.0	36
Computation	117	26*	9.8	36	162	26*	9.2	36
Concepts	114	12*	3.4	37	162	12*	3.8	37
Application	112	10*	5.2	37	161	10*	5.3	37
8th Grade								
Reading Total	228	33*	14.5	33	167	35*	15.8	37
Vocabulary	242	16*	8.1	37	169	16*	8.1	37
Comprehension	240	17*	7.9	33	168	19*	8.5	39
Math Total	211	33*	12.3	25	168	31*	16.2	21
Computation	229	16*	6.6	26	168	17*	9.1	30
Concepts	218	9*	3.7	29	168	10*	4.2	36
Application	195	8*	3.9	29	123	7*	5.0	23

*Scores for which an achievement gap was likely to exist.

Table B.2

Probable Existence of Achievement Gap (X) Between D. C. and Large City Norms Based on ± 2 Standard Error of Mean Using Students as the Unit of Analysis

	Reading			Math			
	Total	Comprehension	Vocabulary	Total	Applications	Concepts	Computation
Grade							
ENP	X	X	X	X	X	X	X
ON-RENP	X		X	X	X		X
Grade							
ENP	X	X	X	X	X	X	X
ON-RENP	X	X	X	X	X	X	X
Grade							
ENP	X		X	X	X	X	X
ON-RENP	X	X	X	X	X	X	X
Grade							
ENP	X	X	X	X	X	X	X
ON-RENP	X	X	X	X	X	X	X

APPENDIX C

Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

One of the questions which recurs throughout this study pertains to the number of students who were "in trouble" at time of pretest and were "out of trouble" by the time the posttest was administered. Thus the partitioning of students into appropriate levels was crucial to the analyses. Each student was placed into a "high", "middle", or "low" achievement category based on his/her CTBS pretest scores. The categories were defined as follows:

- High -- Students reading at or above the 50th percentile of large city norms for their grade level.
- Middle -- Students reading below the 50th percentile of large city norms for their grade level but at or above the 50th percentile of large city norms for one grade level below their grade level.
- Low -- Students reading below the 50th percentile of large city norms for one grade level below their present grade level.

Since a major interest in the study was to determine whether or not RENP was helping to close the gap between Washington, D. C. and large city norms, achievement levels were defined relative to the 50th percentile of large city norms.

The following tables present the numbers and percentages of students in each of the three achievement levels for RENP and NON-RENP by grade. The levels are defined separately for each of the seven CTBS scores. Thus, a student who is a low achiever in Math Total may or may not be a low achiever in Reading Total.

The numbers include students with both Fall 1976 and Spring 1977 test scores. The 8th grade NON-RENP group includes all students who took the pretest since Spring data were not available.

TABLE C.1 CTBS READING TOTAL: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	36	41	36	36	72	38
Middle	27	31	27	27	54	29
High	25	28	38	38	63	33
Total	88	100	101	100	189	100
5th Grade						
Low	71	58	19	49	90	56
Middle	15	12	9	23	24	15
High	36	30	11	28	47	29
Total	122	100	39	100	161	100
6th Grade						
Low	42	42	74	52	116	48
Middle	16	16	18	13	34	14
High	43	43	49	35	92	38
Total	101	101	141	100	242	100
8th Grade						
Low	91	58	85	61	176	59
Middle	23	15	12	8	35	12
High	42	27	43	31	85	29
Total	156	100	140	100	296	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. NS for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

TABLE C.2 CTBS READING VOCABULARY: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	34	39	41	40	75	40
Middle	27	31	18	18	45	24
High	26	30	43	42	69	36
Total	87	100	102	100	189	100
5th Grade						
Low	66	54	26	65	92	57
Middle	23	19	2	5	25	15
High	33	27	12	30	45	28
Total	122	100	40	100	162	100
6th Grade						
Low	46	47.	75	53	121	50
Middle	13	13	23	16	36	15
High	40	40	44	31	84	35
Total	99	100	142	100	241	100
8th Grade						
Low	93	51	78	55	171	53
Middle	31	17	24	17	55	17
High	57	32	39	28	96	30
Total	181	100	141	100	322	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. Ns for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

TABLE C.3 CTBS READING COMPREHENSION: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	33	38	39	38	72	38
Middle	25	29	19	18	44	23
High	29	33	45	44	74	39
Total	87	100	103	100	190	100
5th Grade						
Low	73	59	16	41	89	55
Middle	17	14	7	18	24	15
High	33	27	16	41	49	30
Total	123	100	39	100	162	100
6th Grade						
Low	35	36	67	48	102	43
Middle	17	17	21	15	38	16
High	46	47	53	37	99	41
Total	98	100	141	100	239	100
8th Grade						
Low	120	64	84	59	204	62
Middle	21	11	22	15	43	13
High	47	25	37	26	84	25
Total	188	100	143	100	331	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. Ns for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

TABLE C.4 CTBS MATH TOTAL: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	25	30	23	25	48	27
Middle	33	40	33	35	66	38
High	24	29	37	40	61	35
Total	82	99	93	100	175	100
5th Grade						
Low	49	48	19	49	68	48
Middle	31	30	6	15	37	26
High	22	22	14	36	36	26
Total	102	100	39	100	141	100
6th Grade						
Low	44	48	65	48	109	48
Middle	20	22	28	21	48	21
High	27	30	42	31	69	31
Total	91	100	135	100	226	100
8th Grade						
Low	72	59	69	70	141	64
Middle	19	16	13	13	32	14
High	31	25	17	17	48	22
Total	122	100	99	100	221	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. Ns for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

TABLE C.5

CTBS MATH COMPUTATIONS: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	21	24	24	23	45	24
Middle	43	50	44	43	87	46
High	23	26	35	34	58	30
Total	87	100	103	100	190	100
5th Grade						
Low	56	46	14	34	70	43
Middle	34	28	14	34	48	30
High	31	26	13	32	44	27
Total	121	100	41	100	162	100
6th Grade						
Low	39	41	56	40	95	40
Middle	23	24	28	20	51	22
High	34	35	55	40	89	38
Total	96	100	139	100	235	100
8th Grade						
Low	116	68	94	65	210	68
Middle	17	10	21	14	38	12
High	37	22	30	21	67	20
Total	170	100	145	100	315	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. Ns for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

TABLE C.6

CTBS MATH CONCEPTS: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	25	29	30	29	55	29
Middle	29	34	22	22	51	27
High	32	37	50	49	82	44
Total	86	100	102	100	188	100
5th Grade						
Low	53	44	15	37	68	42
Middle	25	21	11	26	36	22
High	43	35	15	37	58	36
Total	121	100	41	100	162	100
6th Grade						
Low	45	48	73	47	118	51
Middle	22	24	19	15	41	18
High	26	28	47	38	73	31
Total	93	100	139	100	232	100
8th Grade						
Low	79	48	72	51	151	50
Middle	37	23	29	20	66	22
High	47	29	41	29	88	28
Total	163	100	142	100	305	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. Ns for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

TABLE C.7

CTBS MATH APPLICATIONS: Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 Analyses)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	34	41	30	32	64	36
Middle	28	34	24	26	52	29
High	21	25	40	42	61	35
Total	83	100	94	100	177	100
5th Grade						
Low	50	49	20	51	70	50
Middle	22	22	8	21	30	21
High	30	29	11	28	41	29
Total	102	100	39	100	141	100
6th Grade						
Low	44	48	76	56	120	53
Middle	17	19	14	10	31	14
High	30	33	45	34	75	33
Total	91	100	135	100	226	100
8th Grade						
Low	83	59	84	85	167	72
Middle	10	7	3	3	13	6
High	48	34	12	12	60	22
Total	141	100	99	100	240	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976 and Spring 1977 data. Ns for 8th grade NON-RENP include all students who took the Fall 1976 pretest since posttest data were not available.

APPENDIX D

Prescriptive Reading and Math Test Score Results for Fall 1976 and Spring 1977

Data Collection

An attempt was made to collect Fall 1976 and Spring 1976 posttest Prescriptive Reading Test (PRT) and Prescriptive Math Test (PMT) data from all teachers whose students comprised the RENP and Non-RENP samples. However, circumstances beyond the control of the research staff prevented the collection of complete data. First of all, the data were collected one year following the actual administration of the PRT and PMT. At this point the majority of teachers had discarded test results. Secondly, though copies of PRT and PMT scores were kept on file in students' school records, many principals were reluctant to give access to them.

Scoring

The data used in the analysis of student competencies in Reading and Math consisted of PMT and PRT Class Record Sheets for individual teachers. The Class Record Sheet contained the students' names and listed the criterion skills. Each student was scored in each skill area on the basis of mastery/non-mastery. In addition, the record sheet contained the percentage of students mastering each criterion skill. This was used as the basis of our own analyses. For each classroom the percentages of students mastering a skill were summed across all skill items on the test and divided by the number of skills, yielding a Mean Student Percentage Mastery. Having done this for each teacher, the Mean Student Percentage Mastery scores for the individual teachers were summed and divided by the number of teachers (by grade and test level) to yield a Mean Classroom Percentage Mastery score. This procedure was used for both pretest and posttest PRT-PMT data. However, due to the fact that students in a particular classroom often changed test level from Fall to Spring the comparisons between pretest to posttest for any given level cannot be interpreted as involving the same students. This severe attrition from the original sample makes generalizations based on these data impossible. Therefore, only descriptive data are presented and no tests of statistical significance of differences between RENP and Non-RENP were conducted.

TABLE D.1 PRESCRIPTIVE READING TEST: Mean Classroom Percentage Mastery for Fall 1976 Pretest and Spring 1977 Posttest by Grade and Level for RENP, NON-RENP and Total Samples

	LEVEL C						LEVEL D					
	Pretest			Posttest			Pretest			Posttest		
	N*	Mean%**	SD	N*	Mean%	SD	N*	Mean%	SD	N*	Mean%	SD
GRADE 4												
RENP	-	-	-	-	-	-	-	-	-	-	-	-
NON-RENP	2(19)	77	1.9	2(19)	81	5.5	2(38)	61	7.9	2(28)	79	2.5
TOTAL	2(19)	77	1.9	2(19)	81	5.5	2(38)	61	7.9	2(28)	79	2.5
GRADE 5												
RENP	5(59)	61	17.6	5(45)	73	15.2	3(34)	71	13.6	3(39)	77	5.1
NON-RENP	-	-	-	-	-	-	1(9)	67	0.0	1(13)	74	0.0
TOTAL	5(59)	61	17.6	5(45)	73	15.2	4(43)	70	11.3	4(52)	76	4.4
GRADE 6												
RENP	-	-	-	-	-	-	-		-	-	-	-
NON-RENP	-	-	-	-	-	-	2(13)	63	7.6	2(19)	69	4.8
TOTAL	-	-	-	-	-	-	2(13)	63	7.6	2(19)	69	4.8

*Due to difficulties in collecting the Prescriptive Reading Test data, it was not possible to match individual students' pre and posttests in each classroom. Thus the Ns presented represent the number of classrooms with the actual number of students in parentheses. These data, therefore, only suggest the true pre to posttest effects and should be interpreted in this light.

**Mean percentage of students across classrooms who mastered any given skill.

TABLE D.2 PRESCRIPTIVE MATH TEST: Mean Classroom Percentage Mastery for Fall 1976 Pretest and Spring 1977 Posttest by Grade and Level for RENP, NON-RENP and Total Samples

	LEVEL C						LEVEL D						LEVEL E					
	Pretest			Posttest			Pretest			Posttest			Pretest			Posttest		
	N*	Mean%**	SD	N*	Mean	SD	N*	Mean%	SD	N*	Mean%*	SD	N*	Mean	SD	N*	Mean%	SD
GRADE 4																		
RENP	1(14)	30	0.0	1(21)	51	0.0	1(11)	39	0.0	1(20)	47	0.0	3(43)	53	14.1	3(26)	63	20.2
NON-RENP	3(48)	44	9.5	3(32)	58	7.8	2(26)	40	0.0	2(30)	58	11.3	-	-	-	-	-	-
TOTAL	4(62)	41	10.7	4(53)	56	7.3	3(37)	40	.6	3(50)	54	10.5	3(43)	53	14.1	3(26)	63	20.2
GRADE 5																		
RENP	3(43)	53	14.1	3(26)	63	20.2	2(32)	36	4.9	2(40)	57	9.9	-	-	-	-	-	-
NON-RENP	-	-	-	-	-	-	1(10)	48	0.0	1(14)	64	0.0	1(11)	21	0.0	1(8)	53	0.0
TOTAL	3(43)	53	14.1	3(26)	63	20.2	3(42)	40	7.8	3(54)	59	8.3	1(11)	21	0.0	1(8)	53	0.0
GRADE 6																		
RENP	-	-	-	-	-	-	2(27)	46	1.2	2(22)	63	3.9	2(23)	25	1.3	2(22)	41	5.6
NON-RENP	-	-	-	-	-	-	2(23)	41	4.1	2(22)	55	3.3	3(22)	28	2.6	3(25)	44	7.5
TOTAL	-	-	-	-	-	-	4(50)	43	4.0	4(44)	59	5.8	5(45)	27	2.9	5(47)	43	6.2

*Due to difficulties in collecting the Prescriptive Math Test data, it was not possible to match individual students' pre and posttests in each classroom. Thus the Ns presented represent the number of classrooms with the actual number of students in parentheses. These data, therefore, only suggest the true pre to posttest effects and should be interpreted in this light.

**Mean percentage of students across classrooms who mastered any given skill.

APPENDIX E

Results of Output from Split-plot Analysis of Covariance using Fall 1976 Pretest CTBS Raw Scores as the covariate and the following Spring 1977 Posttest Raw Scores as dependent variables.

- Reading: Total Score
  - Vocabulary
  - Comprehension

- Math: Total Score
  - Computations
  - Concepts
  - Applications

APPENDIX E.1

General Description of Analytical Model

The analysis of covariance uses the unweighted classroom means of CTBS pretest raw scores as the covariate and the CTBS posttest raw scores as the dependent variable. The analysis of covariance is a treatment (RENP/NON-RENP) by grade (4th, 5th and 6th), by class nested within grade by three achievement level design. The unit of analysis is the classroom, which meets the requirement of independence of observation for the analysis of covariance model.

One of the concerns in evaluating the RENP project was that effects, if present, might not be uniform across all children. It was possible, therefore, that tests of main effects would overlook important program by type of student interactions. As one step against such a possibility, a split-plot design was used which left level of past school achievement (high, medium, and low) crossed with the RENP to NON-RENP comparison. While splitting each class into three groups of students was motivated by a concern for estimating interactions, it also contributed toward the solution of another problem in the evaluation, i.e., correcting for its quasi-experimental nature. The correction for nonrandom assignment results from each classroom getting equal weight for the mean of its students in each category of past achievement rather than weights equal to the number of students falling in the category. Thus, each classroom tends to look like each other classroom on the pretest, but not exactly because of the crudeness of the blocking (only three categories). To the extent that pretest and posttest are correlated, this "equating" on the pretest will control for confounding in the posttest. Thus, the unweighted group mean on the pretest for the three groups within each classroom was used as the covariate in the analysis of covariance. It was important that the raw classroom means on pretest not be used as the covariate since this would, together with the blocking, amount to double adjustment.

This type of analysis enabled us to examine the effectiveness of RENP compared with the Non-RENP across grade by achievement level and within grade by achievement level. The following section presents:

- Summaries of Output from Split-plot Analysis of Covariance -- Tables E.2 and E.3.
- CTBS Mean Pretest, Posttest and Adjusted Posttest Raw Scores by Grade for RENP, Non-RENP and Total Samples -- Tables E.4-10.
- CTBS Mean Pretest, Posttest and Adjusted Posttest Raw Scores by Grade by Achievement Level for RENP, Non-RENP and Total Samples -- Tables E.11-17.

TABLES E.2-3

Summary of Output from Analysis of Covariance (F-levels)

TABLE E. 2

CTBS READING SCORES: Summary of Output from Split-plot Analysis of Covariance Using Spring 1977 Posttest Raw Scores As the Dependent Variable and Fall 1976 Pretest Raw Scores as the Covariate Including Grades 4, 5 and 6**

	Source of Variation	DF	F-ratios ***		
			VOCABULARY	COMPREHENSION	TOTAL
Main Effect	Treatment (TR)	1	.16	3.61*	.78
	Achievement Level (ACH)	2	149.72*	90.77*	180.64*
	Grade (GR)	2	.19	.68	0.22
2-Way Interactions					
	TR X ACH	2	3.31*	.31	1.53
	TR X Grade	2	.45	2.93*	0.39
	ACH X Grade	4	.40	.49	1.71
3-Way Interaction					
	TR X ACH X Grade	4	.04	.68	0.58

*Significant at $p \leq .10$

**Grade 8 was to be analyzed separately. Unfortunately, Spring posttest data were not available for the NON-RENP classrooms thus the analysis could not be conducted. Means are presented for the 8th grade classrooms in later tables for comparison.

*** The error term for TR, GR and TR X GR was "classrooms within Treatment and Grade"; for ACH, ACH X TR, ACH X GR and ACH x TR X GR was "Classrooms by achievement level within treatment and grade".

TABLE E.3 CTBS MATH SCORES: Summary of Output from Split-plot Analysis of Covariance Using Spring 1977 Posttest Raw Scores As the Dependent Variable and Fall 1976 Pretest Raw Scores as the Covariate Including Grades 4, 5 and 6**

	Source of Variation	DF	F-ratios***			
			COMPUTATION	CONCEPTS	APPLICATIONS	TOTAL
Main Effect						
	Treatment (TR)	1	.96	4.50*	.20	0.43
	Achievement Level (ACH)	2	166.44*	56.19*	90.72*	239.38*
	Grade (GR)	2	1.02	.03	3.04*	0.77
2-Way Interactions						
	TR X ACH	2	2.42*	2.50*	.54	0.48
	TR X Grade	2	2.15	.92	.50	2.84*
	ACH X Grade	4	3.10*	2.68*	.15	3.19*
3-Way Interaction						
	TR X ACH X Grade	4	3.07*	.42	1.62	2.63*

*Significant at $p \leq .10$

**Grade 8 was to be analyzed separately. Unfortunately, Spring posttest data were not available for the NON-RENP classrooms thus the analysis could not be conducted. Means are presented for the 8th grade classrooms in later tables for comparison.

***The error term for TR, GR and TR X GR was "classrooms within Treatment and Grade; for ACH, ACH X TR, ACH X GR and ACH X TR X GR was "classrooms by achievement level within treatment and grade".

TABLES E4-10

CTBS Mean Pretest, Posttest and Adjusted Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples

TABLE E.4 CTBS READING TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Adjusted *** Raw Scores
		Mean	SD	LC%**	Mean	SD	LC%**	Mean
4th Grade								
RENP	5	39	14.7	41	50	13.8	42	
NON-RENP	5	40	17.3	43	49	15.5	40	
TOTAL	10	40	15.7	43	49	14.4	40	48
5th Grade								
RENP	6	33	10.3	41	48	11.6	57	
NON-RENP	3	33	11.3	41	44	12.4	48	
TOTAL	9	33	10.4	41	47	11.8	55	50
6th Grade								
RENP	5	41	13.6	43	49	11.7	48	
NON-RENP	7	40	13.3	41	49	11.8	48	
TOTAL	12	41	13.2	43	49	11.5	48	47
Combined 4th 5th & 6th								
RENP	16	37	13.0		49	12.1		49
NON-RENP	15	39	14.4		48	13.1		48
TOTAL	31	38	13.7					

---

* Number of classrooms: three scores per classroom (for low, middle and high achievers).

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest raw scores in analysis of covariance.

READING VOCABULARY SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Adjusted*** Raw Scores Mean
4th Grade								
RENP	5	19	6.3	41	25	6.5	38	
NON-RENP	5	19	7.3	41	25	6.8	38	
TOTAL	10	19	6.7	41	25	6.5	38	25
5th Grade								
RENP	6	16	5.7	42	25	6.0	49	
NON-RENP	3	14	5.6	33	26	6.1	54	
TOTAL	9	15	5.6	38	25	6.0	49	25
6th Grade								
RENP	5	20	7.1	43	26	5.4	42	
NON-RENP	7	20	7.5	43	26	6.7	42	
TOTAL	12	20	7.2	43	26	6.0	42	25
Combined 4th 5th & 6th								
RENP	16	18	6.5	--	25	5.9	--	25
NON-RENP	15	18	7.3	--	26	6.5	--	25
TOTAL	31	18	6.9	--	25	6.1	--	
8th Grade								
RENP	9	18	7.1	44	21	5.8	36	
NON-RENP	6	18	7.0	47	--	--	--	
TOTAL	15	18	7.0	44	--	--	--	

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest raw scores in analysis of covariance.

Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Adjusted*** Raw Scores
		Mean	SD	LC%**	Mean	SD	LC%**	Mean
4th Grade								
RENP	5	20	8.5	43	25	7.9	48	
NON-RENP	5	20	9.1	43	23	8.2	44	
TOTAL	10	20	8.7	43	24	8.0	46	24
5th Grade								
RENP	6	17	5.6	41	25	6.5	68	
NON-RENP	3	17	5.2	41	18	6.2	42	
TOTAL	9	17	5.4	41	22	7.0	58	24
6th Grade								
RENP	5	21	6.5	44	22	6.3	51	
NON-RENP	7	21	6.9	44	23	6.1	54	
TOTAL	12	21	6.6	44	23	6.1	54	22
Combined 4th 5th & 6th								
RENP	16	19	6.9	--	24	6.8	--	24
NON-RENP	15	20	7.5	--	22	7.1	--	22
TOTAL	31	19	7.1	--	23	6.9	--	
8th Grade								
RENP	9	21	7.2	44	20	6.5	42	
NON-RENP	6	22	7.5	47	--	--	--	
TOTAL	15	21	7.2	44	--	--	--	

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

CTBS MATH TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Adjust Raw Sc
		Mean	SD	LC%**	Mean	SD	LC%**	Mean
4th Grade								
RENP	5	52	16.9	35	61	17.4	43	
NON-RENP	5	55	19.2	38	66	16.1	49	
TOTAL	10	53	17.8	36	63	16.7	45	60
5th Grade								
RENP	6	44	13.4	45	56	15.2	57	
NON-RENP	3	40	9.3	36	51	8.8	48	
TOTAL	9	42	12.1	41	55	13.4	55	59
6th Grade								
RENP	5	52	13.7	42	66	13.0	58	
NON-RENP	7	51	13.5	41	62	14.3	52	
TOTAL	12	51	13.4	41	63	13.7	53	62
Combined 4th 5th & 6th								
RENP	16	49	14.9		61	15.4		61
NON-RENP	15	50	15.7		61	14.8		60
TOTAL	31	49	15.2					

---

* Number of classrooms: three scores per classroom (for low, middle and high achievers).

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest raw scores in analysis of covariance.

Spring 1977 Posttest Raw Scores and Fall 1976 Pretest Raw Scores by Grade for RENP, NON-RENP and Total Samples

	N*	1976 Fall Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Adjusted*** Raw Scores Mean
4th Grade								
RENP	5	27	10.1	35	32	8.9	44	
NON-RENP	5	27	11.2	35	34	9.4	49	
TOTAL	10	27	10.5	35	33	9.0	46	33
5th Grade								
RENP	6	22	7.4	40	30	7.8	57	
NON-RENP	3	21	6.2	36	26	6.4	45	
TOTAL	9	21	6.9	36	28	7.4	51	29
6th Grade								
RENP	5	27	8.5	39	34	8.4	52	
NON-RENP	7	27	7.9	39	32	8.3	47	
TOTAL	12	27	8.0	39	32	8.3	47	32
Combined 4th 5th & 6th								
RENP	16	25	8.8	--	32	8.3	--	
NON-RENP	15	26	9.0	--	31	8.6	--	32
TOTAL	31	25	8.9		32	8.4	--	31
8th Grade								
RENP	9	20	6.7	41	19	6.4	37	
NON-RENP	6	21	7.9	45	--	--	--	
TOTAL	15	20	7.1	41	--	--	--	

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

TABLE E. CTBS MATH CONCEPTS SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade for RENP, NON-RENP and Total Samples.

		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Adjusted*** Raw Scores
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean
4th Grade								
RENP	5	15	4.6	38	17	3.3	52	
NON-RENP	5	15	5.1	38	16	3.6	46	
TOTAL	10	15	4.8	38	17	3.4	52	15
5th Grade								
RENP	6	11	3.1	41	13	2.1	50	
NON-RENP	3	10	2.6	34	13	1.2	50	
TOTAL	9	11	2.9	41	13	1.9	50	15
6th Grade								
RENP	5	12	2.9	37	16	2.9	61	
NON-RENP	7	13	3.0	44	14	3.4	46	
TOTAL	12	13	2.9	44	15	3.3	53	15
Combined 4th 5th & 6th								
RENP	16	13	3.9	--	15	3.1	--	15
NON-RENP	15	13	4.0	--	14	3.5	--	14
TOTAL	31	13	3.9	--	15	3.3	--	
8th Grade								
RENP	9	11	3.4	42	14	3.7	55	
NON-RENP	6	11	3.2	42	--	--	--	
TOTAL	15	11	3.3	42	--	--	--	

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

TABLE E.10 CTBS MATH APPLICATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Adjusted*** Raw Scores
		Mean	SD	LC%**	Mean	SD	LC%**	Mean
4th Grade								
RENP	5	11	4.6	38	13	3.7	38	
NON-RENP	5	12	5.4	42	14	4.6	43	
	10	12	5.0	42	14	4.2	43	13
5th Grade								
RENP	6	9	3.7	43	12	3.8	52	
NON-RENP	3	9	3.8	43	11	2.9	46	
TOTAL	9	9	3.7	43	12	3.5	52	12
6th Grade								
RENP	5	11	4.1	43	15	3.3	56	
NON-RENP	7	11	4.1	43	14	3.4	51	
TOTAL	12	11	4.1	43	15	3.4	56	14
Combined 4th 5th & 6th								
RENP	16	10	4.2	--	13	3.8	--	
NON-RENP	15	11	4.6	--	14	3.9	--	14
TOTAL	31	10	4.4	--	13	3.8	--	13
8th Grade								
RENP	9	10	3.5	42	11	2.8	42	
NON-RENP	6	10	4.1	42	--	--	--	
TOTAL	15	10	3.7	42	--	--	--	

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

TABLES E.11 - 17

CTBS Mean Pretest, Posttest and Adjusted Posttest Raw Scores by Grade by Achievement Level for RENP, NON-RENP and Total Samples

Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples

		Low Achievers							Middle Achievers							High Achievers						
		1976 Fall****			1977 Spring			Adjusted*** Scores	1976 Fall			1977 Spring			Adjusted*** Scores	1976 Fall			1977 Spring			Adju
		Pretest Raw Scores			Posttest Raw Scores				Pretest Raw Scores			Posttest Raw Scores				Pretest Raw Scores			Posttest Raw Scores			
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Raw Mean	Mean	SD	LC%**	Mean	SD	LC%**	Raw Mean	Mean	SD	LC%**	Mean	SD	LC%**	Raw Mean
4th Grade																						
RENP	5	23	1.1	13	36	7.2	24		37	1.8	38	47	7.8	38		57	5.9	65	65	7.4	64	
NON-RENP	5	21	2.6	10	33	9.6	20		38	2.2	39	48	6.0	39		61	3.9	70	67	4.2	69	
TOTAL	10	22	2.2	11	35	8.1	22		38	1.9	39	48	6.6	39		59	5.3	68	66	5.8	66	
5th Grade																						
RENP	6	21	2.5	13	39	8.1	38		33	1.5	41	46	8.3	52		45	2.9	65	59	8.9	76	
NON-RENP	3	20	1.0	11	29	2.9	19		32	0.2	38	47	1.0	55		46	5.5	67	57	2.5	73	
TOTAL	9	21	2.1	13	36	8.2	31		32	1.2	38	46	6.6	52		45	3.6	65	59	7.2	76	
6th Grade																						
RENP	5	26	4.1	15	36	2.9	25		40	0.6	41	50	5.3	50		57	4.0	67	62	4.3	70	
NON-RENP	7	25	4.6	13	35	6.6	24		41	1.0	43	50	2.3	50		56	4.7	66	61	2.3	68	
TOTAL	12	25	4.2	13	35	5.2	24		41	0.9	43	50	3.6	50		56	4.2	66	61	3.1	68	
Combined 4th, 5th & 6th Grade																						
RENP	16	23	3.3		37	6.3			37	3.6		48	7.1			53	7.2		62	7.2		
NON-RENP	15	23	4.0		33	7.1			38	3.6		49	3.9			56	7.2		62	4.6		
TOTAL	31	23	3.6		35	6.9		35	37	3.6		48	5.7		48	54	7.2		62	6.0		62
8th Grade																						
RENP																						
NON-RENP																						
TOTAL																						

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

**** In the analysis of covariance, the covariate was the unweighted pretest mean across the high, middle and low achievers.

TABLE E.12 CTBS READING VOCABULARY SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for REMP, NON-REMP and Total Samples.

		Low Achievers							Middle Achievers							High Achievers						
		1976 Fall			1977 Spring				1976 Fall			1977 Spring				1976 Fall			1977 Spring			
		Pretest Raw Scores			Posttest Raw Scores			Adjusted*** Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Adjusted*** Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Adjusted** Raw Scores
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Mean
4th Grade																						
REMP	5	11	0.4	15	19	3.4	26		19	1.1	41	24	4.7	36		26	2.3	64	32	3.5	66	
NON-REMP	5	11	1.6	15	17	3.2	22		19	1.4	41	26	3.7	41		28	1.8	71	32	1.7	66	
TOTAL	10	11	1.2	15	18	3.3	24		19	1.2	41	25	4.2	38		27	2.1	67	32	2.6	66	
5th Grade																						
REMP	6	9	1.0	13	19	4.6	29		15	0.3	38	25	4.2	49		23	0.8	68	30	2.3	71	
NON-REMP	3	9	1.9	13	18	2.4	26		15	0.5	38	28	3.0	62		18	7.0	50	31	.6	75	
TOTAL	9	9	1.3	13	19	3.8	29		15	0.6	38	26	4.0	54		21	4.2	61	31	1.9	75	
6th Grade																						
REMP	5	12	1.4	17	21	.9	26		19	0.9	40	25	3.6	38		28	1.9	69	32	2.4	67	
NON-REMP	7	11	2.4	14	18	4.5	20		19	0.6	40	27	3.1	45		28	3.1	69	32	2.2	67	
TOTAL	12	11	2.0	14	19	3.6	21		19	0.7	40	26	3.2	42		28	2.6	69	32	2.2	67	
Combined 4th, 5th & 6th Grade																						
REMP	16	11	1.6	-	19	3.3	-	-	18	2.0	-	25	3.9	-	-	25	2.9	-	31	2.7	-	-
NON-REMP	15	11	2.2	-	18	3.6	-	-	18	2.1	-	27	3.1	-	-	26	5.4	-	32	1.7	-	-
TOTAL	31	11	1.9	-	19	3.5	-	19	18	2.0	-	26	3.7	-	26	26	4.2	-	32	2.3	-	32
8th Grade																						
REMP	9	6	.6	5	15	4.4	20		17	.6	41	21	2.9	36		27	1.7	71	27	2.9	56	
NON-REMP	6	5	.5	3	-	-	-		17	.6	41	-	-	-		26	2.6	68	-	-	-	
TOTAL	15	5	.8	3	-	-	-		17	.6	41	-	-	-		26	2.1	68	-	-	-	

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

COMPREHENSION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers							Middle Achievers							High Achievers						
		1976 Fall			1977 Spring				1976 Fall			1977 Spring				1976 Fall			1977 Spring			
		Pretest Raw Scores			Posttest Raw Scores			Adjusted*** Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Adjusted*** Raw Scores	Pretest Raw Scores			Posttest Raw Scores			
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	
4th Grade																						
RENP	5	10	1.8	12	18	6.0	29		19	1.8	40	25	6.5	48		30	3.0	63	32	4.0	64	
NON-RENP	5	10	.8	12	17	4.7	25		19	.9	40	21	6.8	38		32	2.9	68	32	4.4	64	
TOTAL	10	10	1.3	12	17	5.1	25		19	1.3	40	23	6.6	44		31	2.9	66	32	4.0	64	
5th Grade																						
RENP	6	11	.8	15	19	5.4	47		17	.6	41	25	5.3	68		24	1.5	66	30	4.8	80	
NON-RENP	3	11	.9	15	12	.7	17		16	.4	36	17	5.3	38		23	2.5	63	25	1.5	68	
TOTAL	9	11	.8	15	17	5.5	38		17	.6	41	22	6.2	58		24	1.8	66	28	4.5	75	
6th Grade																						
RENP	5	13	2.3	16	17	3.0	32		21	1.0	44	21	4.3	47		28	1.2	63	30	1.6	72	
NON-RENP	7	13	1.9	16	16	2.8	28		21	.7	44	24	1.4	57		29	3.1	65	30	1.8	72	
TOTAL	12	13	2.0	16	16	2.8	28		21	.7	41	23	3.1	54		29	2.4	65	30	1.6	72	
Combined 4th, 5th & 6th Grade																						
RENP	16	11	2.0	-	18	4.8	-	-	19	1.9	-	24	5.4	-	-	27	3.2	-	30	3.7	-	-
NON-RENP	15	12	1.8	-	15	3.6	-	-	19	1.8	-	22	4.9	-	-	29	4.2	-	29	3.7	-	-
TOTAL	31	12	1.9	-	17	4.4	-	17	19	1.9	-	23	5.2	-	23	27	3.5	-	30	3.7	-	30
8th Grade																						
RENP	9	12	.8	16	14	2.8	25		21	.5	41	19	5.0	39		29	2.2	65	26	4.7	57	
NON-RENP	6	13	1.7	19	-	-	-		21	.6	44	-	-	-		31	2.6	72	-	-	-	
TOTAL	15	13	1.3	19	-	-	-		21	.5	44	-	-	-		30	2.3	68	-	-	-	

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

TABLE E.14 CTBS MATH TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples

Low Achievers

	N*	1976 Fall**** Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Adjusted*** Raw Mean	Scores
4th Grade									
RENP	5	33	3.7	11	39	7.7	18		
NON-RENP	5	33	2.9	11	48	10.1	29		
TOTAL	10	33	3.2	11	44	9.9	24		
5th Grade									
RENP	6	29	1.3	13	42	6.6	31		
NON-RENP	3	30	1.7	14	41	3.0	29		
TOTAL	9	29	1.4	13	42	5.5	31		
6th Grade									
RENP	5	36	2.7	16	52	5.8	38		
NON-RENP	7	36	3.1	16	46	5.3	29		
TOTAL	12	36	2.8	16	49	6.3	33		
Combined 4th, 5th & 6th Grade									
RENP	16	32	3.8		44	8.6			
NON-RENP	15	34	3.5		46	7.1			
TOTAL	31	33	3.6		45	7.8		45	
8th Grade									
RENP									
NON-RENP									
TOTAL									

Middle Achievers

	1976 Fall**** Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Adjusted*** Raw Mean	Scores
4th Grade								
RENP	51	2.6	33	66	3.3	49		
NON-RENP	54	0.6	37	67	3.7	50		
TOTAL	53	2.3	36	66	3.3	49		
5th Grade								
RENP	41	1.8	39	53	5.7	51		
NON-RENP	40	0.3	36	52	0.9	50		
TOTAL	41	1.6	39	52	4.5	50		
6th Grade								
RENP	51	0.9	41	66	9.4	58		
NON-RENP	51	2.2	41	63	9.9	53		
TOTAL	51	1.7	41	64	9.3	55		
Combined 4th, 5th & 6th Grade								
RENP	47	5.3		61	8.9			
NON-RENP	50	5.7		62	8.6			
TOTAL	49	5.5		61	8.7		60	
8th Grade								
RENP								
NON-RENP								
TOTAL								

High Achievers

	1976 Fall Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Adjus Raw Mean
4th Grade							
RENP	72	1.5	59	77	3.5	65	
NON-RENP	78	2.7	67	84	3.7	78	
TOTAL	75	3.8	63	81	4.8	72	
5th Grade							
RENP	60	4.8	74	75	5.5	83	
NON-RENP	51	2.1	60	61	1.5	65	
TOTAL	57	6.0	70	70	8.3	77	
6th Grade							
RENP	68	4.5	65	79	6.1	77	
NON-RENP	67	5.0	64	77	2.9	74	
TOTAL	67	4.6	64	77	4.4	74	
Combined 4th, 5th & 6th Grade							
RENP	66	6.4		77	5.1		
NON-RENP	67	10.6		76	8.9		
TOTAL	67	8.6		76	7.1		76
8th Grade							
RENP							
NON-RENP							
TOTAL							

---

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

**** In the analysis of covariance, the covariate was the unweighted pretest mean across the high, middle and low achievers.

TABLE E.15 CTBS MATH COMPUTATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

Low Achievers

	N*	1976 Fall Pretest Raw Scores Mean	1976 Fall Pretest Raw Scores SD	1976 Fall Pretest Raw Scores LC%**	1977 Spring Posttest Raw Scores Mean	1977 Spring Posttest Raw Scores SD	1977 Spring Posttest Raw Scores LC%**	Adjusted*** Raw Score Mean
4th Grade								
RENP	5	15	1.4	11	22	3.9	24	
NON-RENP	5	14	1.2	10	23	6.6	26	
TOTAL	10	14	1.4	10	23	5.1	26	
5th Grade								
RENP	6	14	1.2	12	25	3.6	42	
NON-RENP	3	14	1.3	12	18	2.4	20	
TOTAL	9	14	1.1	12	23	4.4	36	
6th Grade								
RENP	5	17	2.4	12	24	6.9	28	
NON-RENP	7	17	2.1	12	22	2.6	23	
TOTAL	12	17	2.2	12	23	4.7	25	
Combined 4th, 5th & 6th Grade								
RENP	16	15	2.1	-	24	4.7	-	-
NON-RENP	15	15	2.3	-	22	4.4	-	-
TOTAL	31	15	2.2	-	23	4.6	-	23
8th Grade								
RENP	9	12	0.9	12	13	1.0	15	
NON-RENP	6	12	1.4	12	-	-	-	
TOTAL	15	12	1.2	12	-	-	-	

Middle Achievers

	N*	1976 Fall Pretest Raw Scores Mean	1976 Fall Pretest Raw Scores SD	1976 Fall Pretest Raw Scores LC%**	1977 Spring Posttest Raw Scores Mean	1977 Spring Posttest Raw Scores SD	1977 Spring Posttest Raw Scores LC%**	Adjusted*** Raw Scores Mean
4th Grade								
RENP	5	26	2.1	32	34	4.4	49	
NON-RENP	5	27	1.5	35	36	2.7	53	
TOTAL	10	27	1.7	35	35	3.7	51	
5th Grade								
RENP	6	20	0.3	32	25	5.8	42	
NON-RENP	3	20	1.0	32	31	3.4	59	
TOTAL	9	20	0.7	32	27	5.6	48	
6th Grade								
RENP	5	27	1.5	39	36	2.0	57	
NON-RENP	7	27	1.0	39	33	5.0	50	
TOTAL	12	27	1.2	39	34	4.0	52	
Combined 4th, 5th & 6th Grade								
RENP	16	24	3.4	-	31	6.3	-	-
NON-RENP	15	26	3.3	-	34	4.3	-	-
TOTAL	31	25	3.4	-	32	5.5	-	32
8th Grade								
RENP	9	21	0.7	45	22	6.0	47	
NON-RENP	6	21	0.6	45	-	-	-	
TOTAL	15	21	0.6	45	-	-	-	

High Achievers

	N*	1976 Fall Pretest Raw Scores Mean	1976 Fall Pretest Raw Scores SD	1976 Fall Pretest Raw Scores LC%**	1977 Spring Posttest Raw Scores Mean	1977 Spring Posttest Raw Scores SD	1977 Spring Posttest Raw Scores LC%**	Adjusted*** Raw Score Mean
4th Grade								
RENP	5	38	1.9	60	41	2.2	71	
NON-RENP	5	40	2.9	65	43	2.7	78	
TOTAL	10	39	2.4	62	42	2.5	74	
5th Grade								
RENP	6	31	2.9	63	39	3.4	81	
NON-RENP	3	28	0.3	63	30	1.3	57	
TOTAL	9	30	2.7	69	36	5.1	72	
6th Grade								
RENP	5	36	2.3	64	41	3.1	73	
NON-RENP	7	36	1.8	64	40	2.9	70	
TOTAL	12	36	1.9	64	40	2.9	70	
Combined 4th, 5th & 6th Grade								
RENP	16	35	4.1	-	40	3.1	-	-
NON-RENP	15	36	4.8	-	39	5.4	-	-
TOTAL	31	35	4.4	-	39	4.3	-	39
8th Grade								
RENP	9	28	3.3	64	23	5.6	50	
NON-RENP	6	30	3.3	68	-	-	-	
TOTAL	15	28	3.4	64	-	-	-	

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

CTBS MATH CONCEPTS: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers							Middle Achievers							High Achievers						
		1976 Fall			1977 Spring			Adjusted***	1976 Fall			1977 Spring			Adjusted***	1976 Fall			1977 Spring			Adjus
		Pretest Raw Scores			Posttest Raw Scores			Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Raw S
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Mea
4th Grade																						
RENP	5	9	0.7	16	13	1.5	28		15	0.1	38	18	2.3	59		20	0.7	69	20	1.3	72	
NON-RENP	5	9	1.8	16	13	2.4	28		14	0.9	33	16	2.0	46		21	0.5	76	20	.8	72	
TOTAL	10	9	1.3	16	13	1.9	28		15	0.7	38	17	2.2	52		20	0.6	69	20	1.0	72	
5th Grade																						
RENP	6	7	0.7	14	11	1.1	34		11	0.4	41	14	2.1	57		14	0.9	63	15	1.0	65	
NON-RENP	3	8	0.6	19	12	.2	41		10	0.1	34	12	.9	41		14	0.5	63	14	.7	57	
TOTAL	9	7	0.7	14	11	.9	34		11	0.3	41	13	1.9	50		14	0.8	63	15	1.0	65	
6th Grade																						
RENP	5	9	0.7	19	13	1.3	39		12	0.3	37	16	3.1	61		16	1.1	64	17	2.5	68	
NON-RENP	7	9	0.7	19	12	2.4	32		13	0.3	44	13	3.0	39		16	1.5	64	17	2.7	68	
TOTAL	12	9	0.7	19	12	2.1	32		12	0.4	37	14	3.4	46		16	1.3	64	17	2.5	68	
Combined 4th, 5th & 6th Grade																						
RENP	16	8	1.3	-	12	1.6	-	-	12	1.8	-	16	3.0	-	-	17	2.7	-	17	2.6	-	-
NON-RENP	15	9	1.3	-	12	2.1	-	-	13	1.6	-	14	2.9	-	-	17	3.0	-	17	3.1	-	-
TOTAL	31	9	1.3	-	12	1.8	-	12	13	1.7	-	15	3.0	-	15	17	2.8	-	17	2.8	-	17
8th Grade																						
RENP	9	7	.4	17	11	3.5	31		11	.2	42	15	3.5	63		15	1.4	64	15	3.1	63	
NON-RENP	6	7	1.2	17	-	-	-		11	.2	42	-	-	-		14	.8	59	-	-	-	
TOTAL	15	7	.8	17	-	-	-		11	.2	42	-	-	-		14	1.2	59	-	-	-	

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

TABLE E.17 CTBS MATH APPLICATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Adjusted Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers							Middle Achievers							High Achievers						
		1976 Fall			1977 Spring			Adjusted***	1976 Fall			1977 Spring			Adjusted***	1976 Fall			1977 Spring			Adju
		Pretest Raw Scores			Posttest Raw Scores			Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Raw Scores	Pretest Raw Scores			Posttest Raw Scores			Raw
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Mean	Mean	SD	LC%**	Mean	SD	LC%**	Me
4th Grade																						
RENP	5	6	.5	15	10	1.4	25		11	.5	38	14	2.2	43		17	.8	62	16	4.7	51	
NON-RENP	5	6	.3	15	11	2.0	30		11	.8	38	13	2.5	38		19	.4	70	19	3.8	64	
TOTAL	10	6	.4	15	10	1.6	25		11	.6	38	13	2.3	38		18	1.2	66	18	4.4	60	
5th Grade																						
RENP	6	4	1.1	10	9	1.7	34		9	.4	43	11	2.8	46		14	.9	70	16	3.0	72	
NON-RENP	3	5	.5	15	9	1.0	34		9	.3	43	10	.5	40		13	.3	65	15	1.1	67	
TOTAL	9	5	.8	15	9	1.4	34		9	.4	43	11	2.3	46		13	.7	65	15	2.4	67	
6th Grade																						
RENP	5	6	.9	15	12	.8	42		10	.2	37	13	1.7	47		16	2.0	65	19	1.8	73	
NON-RENP	7	6	.9	15	11	1.9	36		10	.2	37	14	2.1	51		16	1.2	65	18	1.9	68	
TOTAL	12	6	.8	15	12	1.6	42		10	.2	37	14	1.8	51		16	1.6	65	18	1.9	68	
Combined 4th, 5th & 6th Grade																						
RENP	16	6	0.8	-	10	2.0	-	-	10	1.1	-	13	2.5	-	-	15	1.7	-	17	3.5	-	
NON-RENP	15	6	1.1	-	10	1.9	-	-	10	1.0	-	13	2.4	-	-	16	2.6	-	18	2.9	-	
TOTAL	31	6	0.9	-	10	1.9	-	10	10	1.0	-	13	2.4	-	13	16	2.2	-	17	3.2	-	1
8th Grade																						
RENP	9	6	0.6	17	9	2.3	30		10	0.0	42	11	2.2	42		14	1.3	62	13	2.7	55	
NON-RENP	6	5	0.5	12	-	-	-		10	0.0	42	-	-	-		14	1.6	62	-	-	-	
TOTAL	15	5	0.8	12	-	-	-		10	0.0	42	-	-	-		14	1.4	62	-	-	-	

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Posttest raw scores adjusted for pretest scores in analysis of covariance.

APPENDIX F

Results of Output From Split-plot Analyses of Variance Using the Following Growth Scores from Fall 1976 to Spring 1977 as the Dependent Variable

- Reading: Total Score
  - Vocabulary
  - Comprehension
- Math: Total Score
  - Computations
  - Concepts
  - Applications

APPENDIX F.1

General Description of Analytical Model

Preliminary analyses indicated that there is a gap between Washington, D. C. and large city norms (Appendix B). Thus a growth score analysis was used to enable us to answer the question, "Is the achievement gap between Washington, D. C. and large cities being narrowed for the RENP and/or the NON-RENP groups?"

The growth score is a modification of the Standardized Growth Expectation (SGE), a concept developed by Jack Stenner of the National Testing Service. To account for varying "rates of growth", Stenner suggests the Standardized Growth Expectation. He states:

> "The difference between the pretest percentile and the posttest percentile expressed in standard score form is referenced as the Standardized Growth Expectation (SGE)."

Based on Stenner's concept, the growth score was defined as the posttest raw score minus the expected posttest raw score.

Posttest Raw Score

Minus

Expected Posttest Raw Score

Equals

Growth Score

The expected posttest raw score is that raw score which a student must obtain on the posttest in order to maintain his/her pretest percentile rank relative to the normative group and is obtained by:

1. Using pretest norms (ex. 4.1 norms for 4th grade month one for fall 1976 pretest), determine the student's percentile rank (30%).

2. Using the pretest percentile rank (30%) enter the posttest norms (ex. 4.7 norms for 4th grade, month seven for the Spring 1977 posttest) and determine the equivalent raw score. This posttest raw score is the expected posttest raw score for this individual.

3. Any number of raw gain score points over or under that expected is the growth score.

An analysis of variance model using the growth score as the dependent variable was used. The analysis of variance is a treatment (RENP/NON-RENP) by grade (4th, 5th and 6th), by class nested within grade by three achievement level design. The unit of analysis is the classroom, which meets the requirement of independence of observation for the analysis of variance model.

One of the concerns in evaluating the RENP project was that effects, if present, might not be uniform across all children. It was possible, therefore, that tests of main effects would overlook important program effects by type of student interactions. As one step against such a possibility, a split-plot design was used which left level of past school achievement (high, medium, and low) crossed with the RENP to NON-RENP comparison. While splitting each class into three groups of students was motivated by a concern for estimating interactions, it also contributed toward the solution of another problem in the evaluation, i.e., correcting for its quasi-experimental nature. The correction for nonrandom assignment esults from each classroom getting equal weight for the mean of its students n each category of past achievement rather than weights equal to the number f students falling in the category. Thus, each classroom tends to look ke each other classroom on the pretest, but not exactly because of the udeness of the blocking (only three categories). To the extent that etest and posttest are correlated, this "equating" on the pretest will trol for confounding in the posttest.

This type of analysis enabled us to examine the effectiveness of RENP compared with the NON-RENP across grade by achievement level and within grade by achievement level. The following section presents:

- Summaries of Output from Analyses of Variance -- Tables F.2-3.
- CTBS Mean Pretest Raw Scores, Posttest Raw Scores and Growth Scores by Grade for RENP, Non-RENP and Total Samples -- Tables F.4-10.
- CTBS Mean Pretest Raw Scores, Posttest Raw Scores and Growth Scores by Grade by Achievement Level for RENP, Non-RENP and Total Samples -- Tables F.11-17.

TABLES F.2 - 3

Summary of Output From Analyses of Variance (F-Levels)

TABLE F.2 CTBS READING SCORES: Summary of Output From Split-plot Analysis of Variance Using Growth Scores** (from Fall 1976 to Spring 1977) as the Dependent Variable Including Grades 4, 5, and 6***

	Source of Variation	DF	F-ratios**** VOCABULARY	COMPREHENSION	TOTAL
Main Effect	Treatment (TR)	1	.56	3.79*	.47
	Achievement Level (ACH)	2	21.50*	3.34*	11.42*
	Grade (GR)	2	5.26*	1.84	3.69*
2-Way Interactions	TR X ACH	2	3.56*	.21	.60
	TR X Grade	2	.52	2.82*	.37
	ACH X Grade	4	.97	1.21	.72
3-Way Interaction	TR X ACH X Grade	4	.07	.81	.72

*Significant at $p \leq .10$

** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means since the unit of analysis is the classroom.

***Grade 8 was to be analyzed separately. Unfortunately Spring posttest data were not available for the NON-RENP group thus the analysis could not be conducted. Means are presented for the 8th grade RENP groups in later tables for comparison purposes.

****The error term for TR, GR and TR X GR was "classrooms within Treatment and Grades"; for ACH, ACH X TR, ACH X GR and ACH X TR X GR was "classrooms by achievement level within treatment and grade".

TABLE F.3

CTBS MATH SCORES: Summary of Output from Split-plot Analysis of Variance Using Growth Scores** (from Fall 1976 to Spring 1977) as the Dependent Variable Including Grades 4, 5 and 6***

	Source of Variation	DF	F-ratios****			
			COMPUTATION	CONCEPTS	APPLICATIONS	TOTAL
Main Effect						
	Treatment (TR)	1	.56	4.85*	.41	.32
	Achievement Level (ACH)	2	13.98*	13.74*	25.30*	8.08*
	Grade (GR)	2	.93	.25	3.41*	.83
2-Way Interactions						
	TR X ACH	2	1.74	2.66*	.26	.28
	TR X Grade	2	1.13	.91	.12	1.26
	ACH X Grade	4	.55	.98	1.16	1.14
3-Way Interaction						
	TR X ACH X Grade	4	3.08*	.31	1.06	2.21*

* Significant at $p \leq .10$

** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means since the unit of analysis is the classroom.

***Grade 8 was to be analyzed separately. Unfortunately Spring posttest data were not available for the NON-RENP group thus the analysis could not be conducted. Means are presented for the 8th grade RENP groups in later tables for comparison purposes.

****The error term for TR, GR and TR X GR was "classrooms within Treatment and Grade"; for ACH, ACH X TR, ACH X GR and ACH X TR X GR was "classrooms by achievement level within treatment and grade".

TABLES F.4 - 10

CTBS Mean Pretest Raw Scores, Posttest Raw Scores and Growth Scores by Grade for RENP, Non-RENP and Total Samples.

TABLE F.4 CTBS READING TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth *** Scores	
		Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade									
RENP	5	39	14.7	41	50	13.8	42	2.9	7.3
NON-RENP	5	40	17.3	43	49	15.5	40	2.3	6.6
TOTAL	10	40	15.7	43	49	14.4	40	2.6	6.8
5th Grade									
RENP	6	33	10.3	41	48	11.6	57	9.0	8.4
NON-RENP	3	33	11.3	41	44	12.4	48	5.9	2.1
TOTAL	9	33	10.4	41	47	11.8	55	8.0	7.0
6th Grade									
RENP	5	41	13.6	43	49	11.7	48	4.7	5.3
NON-RENP	7	40	13.3	41	49	11.8	48	4.3	3.9
TOTAL	12	41	13.2	43	49	11.6	48	4.3	4.4
Combined 4th 5th & 6th									
RENP	16	37	13.0		49	12.1		5.8	7.5
NON-RENP	15	39	14.4		48	13.1		4.2	4.8
TOTAL	31	38	13.7						

---

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLE F.5 CTBS READING VOCABULARY SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Scores	
		Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade									
RENP	5	19	1.1	41	25	6.5	38	1.4	4.5
NON-RENP	5	19	1.4	41	25	6.8	38	1.6	2.3
TOTAL	10	19	1.2	41	25	6.5	38	1.5	3.5
5th Grade									
RENP	6	16	0.5	42	25	6.0	49	3.7	4.0
NON-RENP	3	14	2.9	33	26	6.1	54	5.8	2.4
TOTAL	9	15	1.8	38	25	6.0	49	4.4	3.6
6th Grade									
RENP	5	20	0.6	43	26	5.4	42	1.6	3.3
NON-RENP	7	20	1.4	43	26	6.7	42	1.6	3.3
TOTAL	12	20	1.1	43	26	6.0	42	1.5	3.3
Combined 4th 5th & 6th									
RENP	16	18	2.0	--	25	5.9	--	2.3	4.0
NON-RENP	15	18	2.8	--	26	6.5	--	2.5	3.3
TOTAL	31	18	2.4	--	25	6.1	--	2.4	3.1

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLE F.6 CTBS READING COMPREHENSION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth *** Score	
		Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade									
RENP	5	20	0.1	43	25	7.9	48	3.4	5.3
NON-RENP	5	20	1.3	43	23	8.2	44	1.3	5.2
TOTAL	10	20	0.9	43	24	8.0	46	2.3	5.3
5th Grade									
RENP	6	17	0.3	41	25	6.5	68	7.3	4.9
NON-RENP	3	17	0.6	41	18	6.2	42	1.4	2.8
TOTAL	9	17	0.4	41	22	7.0	58	5.3	5.1
6th Grade									
RENP	5	21	0.9	44	22	6.3	51	3.1	3.4
NON-RENP	7	21	1.2	44	23	6.1	54	3.6	2.1
TOTAL	12	21	1.0	44	23	6.1	54	3.4	2.7
Combined 4th 5th & 6th									
RENP	16	19	1.5	--	24	6.8	--	4.7	4.9
NON-RENP	15	20	1.9	--	22	7.1	--	2.4	3.7
TOTAL	31	19	1.8	--	23	6.9	--	3.6	4.1

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLE F.7 CTBS MATH TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
		Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade									
RENP	5	52	16.9	35	61	17.4	43	8.1	6.2
NON-RENP	5	55	19.2	38	66	16.1	49	10.6	6.7
TOTAL	10	53	17.8	36	63	16.7	45	9.4	6.5
5th Grade									
RENP	6	44	13.4	45	56	15.2	57	8.2	6.1
NON-RENP	3	40	9.3	51	51	8.8	48	6.7	3.3
TOTAL	9	42	12.1	41	55	13.4	55	7.7	5.3
6th Grade									
RENP	5	52	13.7	42	66	13.0	58	11.9	7.9
NON-RENP	7	51	13.5	41	62	14.3	52	8.5	5.6
TOTAL	12	51	13.4	41	63	13.7	53	9.9	7.3
Combined 4th 5th & 6th									
RENP	16	49	14.9		61	15.4		9.3	6.9
NON-RENP	15	50	15.7		61	14.8		8.8	6.2
TOTAL	31	49	15.2						

* Number of classrooms: three scores per classroom (for low, middle and high achievers).

** Percentile rankings for large city norms. These represent the percentile ranking which a _student_ would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLE F.8 CTBS MATH COMPUTATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Growth*** Score Mean	SD
4th Grade									
RENP	5	27	1.1	35	32	8.9	44	5.7	4.0
NON-RENP	5	27	1.1	35	34	9.4	49	7.2	5.5
TOTAL	10	27	1.0	35	33	9.0	46	6.5	4.8
5th Grade									
RENP	6	22	0.8	40	30	7.8	57	6.0	5.3
NON-RENP	3	21	0.6	36	26	6.4	45	4.1	5.1
TOTAL	9	21	0.9	36	28	7.4	51	5.4	5.2
6th Grade									
RENP	5	27	1.6	39	34	8.4	52	5.8	5.5
NON-RENP	7	27	0.9	39	32	8.3	47	3.9	3.8
TOTAL	12	27	1.2	39	32	8.3	47	4.7	4.6
Combined 4th 5th & 6th									
RENP	16	25	2.8	--	32	8.3	--	5.9	4.9
NON-RENP	15	26	2.8	--	31	8.6	--	5.0	4.8
TOTAL	31	25	2.7		32	8.4	--	5.5	4.3

---

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLE F.9 CTBS MATH CONCEPTS SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth *** Score	
		Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade									
RENP	5	15	0.3	38	17	3.3	52	2.5	2.0
NON-RENP	5	15	0.8	38	16	3.6	46	2.0	1.9
TOTAL	10	15	0.5	38	17	3.4	52	2.2	2.0
5th Grade									
RENP	6	11	0.7	41	13	2.1	50	2.2	1.9
NON-RENP	3	10	0.3	34	13	1.2	50	1.6	1.8
TOTAL	9	11	0.4	41	13	1.9	50	2.0	1.8
6th Grade									
RENP	5	12	0.4	37	16	2.9	61	3.0	2.5
NON-RENP	7	13	0.6	44	14	3.4	46	1.3	2.6
TOTAL	12	13	0.5	44	15	3.3	53	2.0	2.7
Combined 4th 5th & 6th									
RENP	16	13	1.8	--	15	3.1	--	2.5	2.1
NON-RENP	15	13	1.7	--	14	3.5	--	1.6	2.2
TOTAL	31	13	1.7	--	15	3.3	--	2.1	2.0

---

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLE F.10 CTBS MATH APPLICATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	1976 Fall Pretest Raw Scores Mean	SD	LC%**	1977 Spring Posttest Raw Scores Mean	SD	LC%**	Growth*** Score Mean	SD
4th Grade									
RENP	5	11	0.3	38	13	3.7	38	1.2	3.4
NON-RENP	5	12	0.4	42	14	4.6	43	1.1	3.2
TOTAL	10	12	0.5	42	14	4.2	43	1.2	3.3
5th Grade									
RENP	6	9	0.4	43	12	3.8	52	2.1	2.6
NON-RENP	3	9	0.3	43	11	2.9	46	1.8	1.9
TOTAL	9	9	0.4	43	12	3.5	52	2.0	2.3
6th Grade									
RENP	5	11	0.4	43	15	3.3	56	3.5	2.1
NON-RENP	7	11	0.8	43	14	3.4	51	2.7	2.5
TOTAL	12	11	0.7	43	15	3.4	56	3.0	2.3
Combined 4th 5th & 6th									
RENP	16	10	1.0	--	13	3.8	--	2.3	2.8
NON-RENP	15	11	1.3	--	14	3.9	--	2.0	2.7
TOTAL	31	10	1.2	--	13	3.8	--	2.1	2.3

---

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's growth score was obtained and then averaged to obtain classroom means.

TABLES F.11 - 17

CTBS Mean Pretest Raw Scores, Posttest Raw Scores and Growth Scores by Grade by Achievement Level for RENP, Non-RENP and Total Samples.

TABLE F.11 CTBS READING TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers								Middle Achievers								High Achievers							
		1976 Fall			1977 Spring			Growth***		1976 Fall			1977 Spring			Growth***		1976 Fall			1977 Spring			Growth***	
		Pretest Raw Scores			Posttest Raw Scores			Scores		Pretest Raw Scores			Posttest Raw Scores			Scores		Pretest Raw Scores			Posttest Raw Scores			Scores	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade																									
RENP	5	23	1.1	13	36	7.2	24	7.9	6.1	37	1.8	38	47	7.8	38	0.9	7.7	57	5.9	65	65	7.4	64	-0.1	6.4
NON-RENP	5	22	2.6	10	33	9.6	20	7.2	9.2	38	2.2	39	48	6.0	39	0.4	3.7	61	3.9	70	67	4.2	69	-0.8	2.4
TOTAL	10	22	2.2	11	35	8.1	22	7.5	7.4	38	1.9	39	48	6.6	39	0.6	5.3	59	5.3	68	66	5.0	66	-0.4	4.6
5th Grade																									
RENP	6	21	2.5	13	39	8.1	38	13.7	8.3	33	1.5	41	46	8.3	52	6.1	7.3	45	2.9	65	59	8.9	76	7.2	8.8
NON-RENP	3	20	1.0	11	29	2.9	19	5.3	1.5	32	0.2	38	47	1.0	55	7.6	0.1	46	5.5	67	57	2.5	73	4.7	2.7
TOTAL	9	21	2.1	13	36	8.2	31	10.9	7.8	32	1.2	38	46	6.6	52	6.6	5.9	45	3.6	65	59	7.2	76	6.4	7.2
6th Grade																									
RENP	5	26	4.1	15	36	2.9	25	7.3	6.7	40	0.6	41	50	5.3	50	5.0	5.4	57	4.0	67	62	4.3	70	1.8	1.8
NON-RENP	7	25	4.6	13	35	6.6	24	7.1	3.9	41	1.0	43	50	2.3	50	4.9	2.2	56	4.7	66	61	2.3	68	2.5	4.2
TOTAL	12	25	4.2	13	35	5.2	24	7.2	5.0	41	0.9	43	50	3.6	50	4.9	3.6	56	4.2	66	61	3.1	68	2.2	3.3
Combined 4th, 5th & 6th Grade																									
RENP	16	23	3.3		37	6.3		9.9	7.3	37	3.6		48	7.1		4.2	6.9	53	7.2		62	7.2		3.2	6.9
NON-RENP	15	23	4.0		33	7.1		6.8	5.6	38	3.6		49	3.9		3.9	3.7	56	7.2		62	4.6		1.8	3.8
TOTAL	31	23	3.6		35	6.9		8.4	6.7	37	3.6		48	5.7		4.0	5.5	54	7.2		62	6.0		2.5	5.6
8th Grade																									
RENP																									
NON-RENP																									
TOTAL																									

* Number of classrooms:

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

TABLE F.12 CTBS READING VOCABULARY SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers							
		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade									
RENP	5	11	0.4	15	19	3.4	26	4.8	3.4
NON-RENP	5	11	1.6	15	17	3.2	22	3.5	1.9
TOTAL	10	11	1.2	15	18	3.3	24	4.2	2.7
5th Grade									
RENP	6	9	1.0	13	19	4.6	29	6.4	4.1
NON-RENP	3	9	1.9	13	18	2.4	26	6.9	1.8
TOTAL	9	9	1.3	13	19	3.8	29	6.6	3.3
6th Grade									
RENP	5	12	1.4	17	21	.9	26	4.7	2.5
NON-RENP	7	11	2.4	14	18	4.5	20	3.4	3.1
TOTAL	12	11	2.0	14	19	3.6	21	3.9	2.9
Combined 4th, 5th & 6th Grade									
RENP	16	11	1.6	-	19	3.3	-	5.4	3.3
NON-RENP	15	11	2.2	-	18	3.6	-	4.1	2.8
TOTAL	31	11	1.9	-	19	3.5	-	4.8	3.1
8th Grade									
RENP	9	6	.6	5	15	4.4	20	1.7	4.2
NON-RENP	6	5	.5	3	-	-	-	-	-
TOTAL	15	5	.8	3	-	-	-	-	-

	Middle Achievers							
	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade								
RENP	19	1.1	41	24	4.7	36	-1.5	4.1
NON-RENP	19	1.4	41	26	3.7	41	1.1	2.4
TOTAL	19	1.2	41	25	4.2	38	- .2	3.4
5th Grade								
RENP	15	0.3	38	25	4.2	49	2.8	4.1
NON-RENP	15	0.5	38	28	3.0	62	7.0	2.0
TOTAL	15	0.6	38	26	4.0	54	4.2	4.2
6th Grade								
RENP	19	0.9	40	25	3.6	38	.2	3.2
NON-RENP	19	0.6	40	27	3.1	45	1.6	3.5
TOTAL	19	0.7	40	26	3.2	42	1.0	3.3
Combined 4th, 5th & 6th Grade								
RENP	18	2.0	-	25	3.9	-	.6	4.1
NON-RENP	18	2.1	-	27	3.1	-	2.5	3.6
TOTAL	18	2.0	-	26	3.7	-	1.6	3.9
8th Grade								
RENP	17	.6	41	21	2.9	36	-1.3	2.9
NON-RENP	17	.6	41	-	-	-	-	-
TOTAL	17	.6	41	-	-	-	-	-

	High Achievers							
	1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade								
RENP	26	2.3	64	32	3.5	66	.8	4.1
NON-RENP	28	1.8	71	32	1.7	66	.3	1.2
TOTAL	27	2.1	67	32	2.6	66	.6	2.8
5th Grade								
RENP	23	0.8	68	30	2.3	71	2.0	2.5
NON-RENP	18	7.0	50	31	.6	75	3.3	1.7
TOTAL	21	4.2	61	31	1.9	75	2.4	2.2
6th Grade								
RENP	28	1.9	69	32	2.4	67	.0	1.8
NON-RENP	28	3.1	69	32	2.2	67	-.2	2.8
TOTAL	28	2.6	69	32	2.2	67	-.1	2.3
Combined 4th, 5th & 6th Grade								
RENP	25	2.9	-	31	2.7	-	1.0	2.8
NON-RENP	26	5.4	-	32	1.7	-	.7	2.5
TOTAL	26	4.2	-	32	2.3	-	.9	2.6
8th Grade								
RENP	27	1.7	71	27	2.9	56	-3.6	2.2
NON-RENP	26	2.6	68	-	-	-	-	-
TOTAL	26	2.1	68	-	-	-	-	-

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

TABLE F.13 CTBS READING COMPREHENSION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers								Middle Achievers								High Achievers							
		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade																									
RENP	5	10	1.8	12	18	6.0	29	5.5	5.5	19	1.8	40	25	6.5	48	4.4	5.9	30	3.0	63	32	4.0	64	.2	3.7
NON-RENP	5	10	.8	12	17	4.7	25	4.1	5.2	19	.9	40	21	6.8	38	.6	6.6	32	2.9	68	32	4.4	64	-.9	3.0
TOTAL	10	10	1.3	12	17	5.1	25	4.8	5.1	19	1.3	40	23	6.6	44	2.5	6.2	31	2.9	66	32	4.0	64	-.4	3.2
5th Grade																									
RENP	6	11	.8	15	19	5.4	47	8.3	5.4	17	.6	41	25	5.3	68	7.9	4.8	24	1.5	66	30	4.8	80	5.6	4.9
NON-RENP	3	11	.9	15	12	.7	17	.9	1.3	16	.4	36	17	5.3	38	1.0	5.2	23	2.5	63	26	1.5	68	2.1	1.1
TOTAL	9	11	.8	15	17	5.5	38	5.8	5.6	17	.6	41	22	6.2	58	5.6	5.7	24	1.8	66	28	4.5	75	4.4	4.3
6th Grade																									
RENP	5	13	2.3	16	17	3.0	32	4.2	3.0	21	1.0	44	21	4.3	47	1.6	4.8	28	1.2	63	30	1.6	72	3.4	1.8
NON-RENP	7	13	1.9	16	16	2.8	28	3.7	3.3	21	.7	44	24	1.4	57	4.1	1.3	29	3.1	65	30	1.8	72	3.0	1.4
TOTAL	12	13	2.0	16	16	2.8	28	3.9	3.1	21	.7	41	23	3.1	54	3.0	3.3	29	2.4	65	30	1.6	72	3.2	1.5
Combined 4th, 5th & 6th Grade																									
RENP	16	11	2.0	-	18	4.8	-	6.1	4.8	19	1.9	-	24	5.4	-	4.8	5.5	27	3.2	-	30	3.7	-	3.2	4.2
NON-RENP	15	12	1.8	-	15	3.6	-	3.3	3.8	19	1.8	-	22	4.9	-	2.3	4.4	29	4.2	-	29	3.7	-	1.5	2.6
TOTAL	31	12	1.9	-	17	4.4	-	4.8	4.5	19	1.9	-	23	5.2	-	3.6	5.1	27	3.5	-	30	3.7	-	2.4	3.6
8th Grade																									
RENP	9	12	.8	16	14	2.8	25	2.1	3.1	21	.5	44	19	5.0	39	-2.5	4.7	29	2.2	65	26	4.7	57	-2.4	5.2
NON-RENP	6	13	1.7	19	-	-	-	-	-	21	.6	44	-	-	-	-	-	31	2.6	72	-	-	-	-	-
TOTAL	15	13	1.3	19	-	-	-	-	-	21	.5	44	-	-	-	-	-	30	2.3	68	-	-	-	-	-

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

TABLE F.14 CTBS MATH TOTAL SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers								Middle Achievers								High Achievers							
		1976 Fall			1977 Spring			Growth***		1976 Fall			1977 Spring			Growth***		1976 Fall			1977 Spring			Growth***	
		Pretest Raw Scores			Posttest Raw Scores			Scores		Pretest Raw Scores			Posttest Raw Scores			Scores		Pretest Raw Scores			Posttest Raw Scores			Scores	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade																									
RENP	5	33	3.7	11	39	7.7	18	6.4	6.8	51	2.6	33	66	3.3	49	13.7	4.4	72	1.5	59	77	3.5	65	4.3	3.0
NON-RENP	5	33	2.9	11	48	10.1	29	15.6	8.6	54	0.6	37	67	3.7	50	11.2	3.4	70	2.7	67	84	3.7	78	5.1	1.9
TOTAL	10	33	3.2	11	44	9.9	24	11.0	8.8	53	2.3	36	66	3.3	49	12.5	3.9	75	3.8	63	81	4.8	72	4.7	2.4
5th Grade																									
RENP	6	29	1.3	13	42	6.6	31	10.0	7.6	41	1.8	39	53	5.7	51	6.6	6.3	60	4.8	74	75	5.5	83	8.0	4.8
NON-RENP	3	30	1.7	14	41	3.0	29	8.5	4.0	40	0.3	36	52	0.9	50	8.3	0.7	51	2.1	60	61	1.5	65	3.2	1.0
TOTAL	9	29	1.4	13	42	5.5	31	9.5	6.4	41	1.6	39	52	4.5	50	7.1	5.1	57	6.0	70	70	8.3	77	6.4	4.5
6th Grade																									
RENP	5	36	2.7	16	52	5.8	38	16.2	7.9	51	0.9	41	66	9.4	58	11.9	10.0	68	4.5	65	79	6.1	77	7.8	3.5
NON-RENP	7	36	3.1	16	46	5.3	29	9.9	6.3	51	2.2	41	63	9.9	53	9.2	8.7	67	5.0	64	77	2.9	74	6.3	4.7
TOTAL	12	36	2.8	16	49	6.3	33	12.5	7.4	51	1.7	41	64	9.3	55	10.3	8.9	67	4.6	64	77	4.4	74	7.0	4.1
Combined 4th, 5th & 6th Grade																									
RENP	16	32	3.8		44	8.6		10.8	8.1	47	5.3		61	8.9		10.4	7.4	66	6.4		77	5.1		6.8	4.1
NON-RENP	15	34	3.5		46	7.1		11.5	7.1	50	5.7		62	8.6		9.7	6.1	67	10.6		76	8.9		5.3	3.5
TOTAL	31	33	3.6		45	7.8		11.1	7.5	49	5.5		61	8.7		10.1	6.7	67	8.6		76	7.1		6.1	3.8

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

TABLE F.15 CTBS MATH COMPUTATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON RENP and Total Samples.

		Low Achievers								Middle Achievers								High Achievers							
		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade																									
RENP	5	15	1.4	11	22	3.9	24	6.9	3.1	26	2.1	32	34	4.4	49	7.3	4.8	38	1.9	60	41	2.2	71	3.0	3.1
NON-RENP	5	14	1.2	10	23	6.6	26	9.3	6.3	27	1.5	35	36	2.7	53	9.2	3.2	40	2.9	65	43	2.7	78	3.0	4.6
TOTAL	10	14	1.4	10	23	5.1	26	8.1	4.9	27	1.7	35	35	3.7	51	8.3	3.9	39	2.4	62	42	2.5	74	3.0	3.7
5th Grade																									
RENP	6	14	1.2	12	25	3.6	42	10.6	4.1	20	0.3	32	25	5.8	42	3.2	6.0	31	2.9	63	39	3.4	81	4.3	2.0
NON-RENP	3	14	1.3	12	18	2.4	20	4.1	1.2	20	1.0	32	31	3.4	59	9.7	3.0	28	0.3	63	30	1.3	57	-1.5	1.5
TOTAL	9	14	1.1	12	23	4.4	36	8.4	4.6	20	0.7	32	27	5.6	48	5.4	5.9	30	2.7	69	36	5.1	72	2.4	3.4
6th Grade																									
RENP	5	17	2.4	12	24	6.9	28	7.4	8.4	27	1.5	39	36	2.0	57	7.4	1.8	36	2.3	64	41	3.1	73	2.8	3.5
NON-RENP	7	17	2.1	12	22	2.6	23	4.9	2.6	27	1.0	39	33	5.0	50	4.6	5.8	36	1.8	64	40	2.9	70	2.1	1.7
TOTAL	12	17	2.2	12	23	4.7	25	5.9	5.6	27	1.2	39	34	4.0	52	5.8	4.7	36	1.9	64	40	2.9	70	2.4	2.5
Combined 4th, 5th & 6th Grade																									
RENP	16	15	2.1	-	24	4.7	-	8.4	5.5	24	3.4	-	31	6.3	-	5.8	4.8	35	4.1	-	40	3.1	-	3.4	2.8
NON-RENP	15	15	2.3	-	22	4.4	-	6.2	4.5	26	3.3	-	34	4.3	-	7.2	5.0	36	4.8	-	39	5.4	-	1.7	3.3
TOTAL	31	15	2.2	-	23	4.6	-	7.3	5.1	25	3.4	-	32	5.5	-	6.5	4.9	35	4.4	-	39	4.3	-	2.6	3.1
8th Grade																									
RENP	9	12	0.9	12	13	1.0	15	0.6	1.6	21	0.7	45	22	6.0	47	1.2	6.5	28	3.3	64	23	5.6	50	-6.8	4.8
NON-RENP	6	12	1.4	12	-	-	-	-	-	21	0.6	45	-	-	-	-	-	30	3.3	68	-	-	-	-	-
TOTAL	15	12	1.2	12	-	-	-	-	-	21	0.6	45	-	-	-	-	-	28	3.4	64	-	-	-	-	-

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

TABLE F.16 CTBS MATH CONCEPTS: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers								Middle Achievers								High Achievers							
		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade																									
RENP	5	9	0.7	16	13	1.5	28	3.2	2.0	15	0.3	38	18	2.3	59	3.4	2.1	20	0.7	69	20	1.3	72	.8	.8
NON-RENP	5	9	1.8	16	13	2.4	28	3.2	2.4	14	0.9	33	16	2.0	46	2.1	1.8	21	0.5	76	20	.8	72	.6	.6
TOTAL	10	9	1.3	16	13	1.9	28	3.2	2.1	15	0.7	38	17	2.2	52	2.8	1.9	20	0.6	69	20	1.0	72	.7	.7
5th Grade																									
RENP	6	7	0.7	14	11	1.1	34	3.7	1.5	11	0.4	41	14	2.1	57	1.9	2.0	14	0.9	63	15	1.0	65	.8	1.0
NON-RENP	3	8	0.6	19	12	.2	41	3.8	1.0	10	0.1	34	12	.9	41	.5	.8	14	0.5	63	14	.7	57	.6	.2
TOTAL	9	7	0.7	14	11	.9	34	3.7	1.3	11	0.3	41	13	1.9	50	1.5	1.8	14	0.8	63	15	1.0	65	.7	.8
6th Grade																									
RENP	5	9	0.7	19	13	1.3	39	3.9	1.4	12	0.3	37	16	3.1	61	4.0	3.3	16	1.1	64	17	2.5	68	1.3	1.7
NON-RENP	7	9	0.7	19	12	2.4	32	2.5	2.2	13	0.3	44	13	3.0	39	.3	2.8	16	1.5	64	17	2.7	68	.9	2.6
TOTAL	12	9	0.7	19	12	2.1	32	3.1	2.0	12	0.4	37	14	3.4	46	1.9	3.4	16	1.3	64	17	2.5	68	1.0	2.2
Combined 4th, 5th & 6th Grade																									
RENP	16	8	1.3	-	12	1.6	-	3.6	1.6	12	1.8	-	16	3.0	-	3.1	2.5	17	2.7	-	17	2.6	-	1.0	1.2
NON-RENP	15	9	1.3	-	12	2.1	-	3.0	2.0	13	1.6	-	14	2.9	-	1.0	2.2	17	3.0	-	17	3.1	-	.7	1.8
TOTAL	31	9	1.3	-	12	1.8	-	3.3	1.8	13	1.7	-	15	3.0	-	2.0	2.6	17	2.8	-	17	2.8	-	.8	1.5
8th Grade																									
RENP	9	7	.4	17	11	3.5	31	3.6	3.5	11	.2	42	15	3.5	63	3.0	3.6	15	1.4	64	15	3.1	63	0.0	3.1
NON-RENP	6	7	1.2	17	-	-	-	-	-	11	.2	42	-	-	-	-	-	14	.8	59	-	-	-	-	-
TOTAL	15	7	.8	17	-	-	-	-	-	11	.2	42	-	-	-	-	-	14	1.2	59	-	-	-	-	-

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

TABLE F.17 CTBS MATH APPLICATION SCORES: Fall 1976 Pretest Raw Scores, Spring 1977 Posttest Raw Scores and Growth Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Low Achievers								Middle Achievers								High Achievers							
		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score		1976 Fall Pretest Raw Scores			1977 Spring Posttest Raw Scores			Growth*** Score	
	N*	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD	Mean	SD	LC%**	Mean	SD	LC%**	Mean	SD
4th Grade																									
RENP	5	6	.5	15	10	1.4	25	3.5	.9	11	.5	38	14	2.2	43	1.9	1.8	17	.8	62	16	4.7	51	-1.8	4.
NON-RENP	5	6	.3	15	11	2.0	30	3.4	2.0	11	.8	38	13	2.5	38	.5	2.8	19	.4	70	19	3.6	64	- .4	3.
TOTAL	10	6	.4	15	10	1.6	25	3.4	1.5	11	.6	38	13	2.3	38	1.2	2.3	18	1.2	66	18	4.4	60	-1.1	3.
5th Grade																									
RENP	6	4	1.1	10	9	1.7	34	3.4	2.2	9	.4	43	11	2.8	46	1.7	2.5	14	.9	70	16	3.0	72	1.2	2.
NON-RENP	3	5	.5	15	9	1.0	34	4.1	.4	9	.3	43	10	.5	40	.4	.8	13	.3	65	15	1.1	67	.8	1.
TOTAL	9	5	.8	15	9	1.4	34	3.6	1.8	9	.4	43	11	2.3	46	1.3	2.1	13	.7	65	15	2.4	67	1.1	2.
6th Grade																									
RENP	5	6	.9	15	12	.8	42	5.8	.8	10	.2	37	13	1.7	47	2.1	1.8	16	2.0	65	19	1.8	73	2.5	1.
NON-RENP	7	6	.9	15	11	1.9	36	4.3	2.4	10	.2	37	14	2.1	51	2.3	2.2	16	1.2	65	18	1.9	68	1.5	2.
TOTAL	12	6	.8	15	12	1.6	42	5.0	2.0	10	.2	37	14	1.8	51	2.2	2.0	16	1.6	65	18	1.9	68	2.0	1.
Combined 4th, 5th & 6th Grade																									
RENP	16	6	0.8	-	10	2.0	-	4.2	1.8	10	1.1	-	13	2.5	-	1.9	1.9	15	1.7	-	17	3.5	-	.7	3.4
NON-RENP	15	6	1.1	-	10	1.9	-	4.0	2.0	10	1.0	-	13	2.4	-	1.3	2.3	16	2.6	-	18	2.9	-	.7	2.7
TOTAL	31	6	0.9	-	10	1.9	-	4.1	1.9	10	1.0	-	13	2.4	-	1.6	2.1	16	2.2	-	17	3.2	-	.7	3.0
8th Grade																									
RENP	9	6	0.6	17	9	2.3	30	2.7	2.0	10	0.0	42	11	2.2	42	.3	2.2	14	1.3	62	13	2.7	55	1.0	2.6
NON-RENP	6	5	0.5	12	-	-	-	-	-	10	0.0	42	-	-	-	-	-	14	1.6	62	-	-	-	-	-
TOTAL	15	5	0.8	12	-	-	-	-	-	10	0.0	42	-	-	-	-	-	14	1.4	62	-	-	-	-	-

* Number of classrooms

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the class mean. (Norms for classrooms do not exist.)

*** Growth Scores are defined as the posttest raw score minus the expected posttest raw score. The expected posttest raw score is that which a student must obtain on the posttest in order to maintain pretest percentile rank. Each student's gain score was obtained and then averaged to obtain classroom means.

APPENDIX G

Results of Descriptive Analyses using a chi-square approach to compare the number of RENP and NON-RENP students and their patterns of gains and losses from Fall 1976 to Spring 1977. These analysis provide a description of the types and ranges of gains/losses which have been accomplished by the RENP and NON-RENP groups.

Analyses use an adjusted percentile gain/loss metric. The adjusted percentile gain/loss for a given student follows:

Posttest Percentile Rank Minus Pretest Percentile Equals Adjusted Percentile Gain/Loss

where posttest percentile rank is the student's actual posttest percentile rank relative to appropriate posttest large city norms and pretest percentile rank is the student's actual pretest percentile rank relative to appropriate pretest large city norms. The adjusted percentile gain/loss is categorized into three groups: ≥ 5% gain, no gain of ± 4% and ≥ 5% loss.

The following chi-square analyses were conducted:

- Number of students who gained/lost from Fall 1976 to Spring 1977 for RENP/Non-RENP (Tables G.1-4).
- Number of students who gained/lost from Fall 1976 to Spring 1977 by pretest achievement level for RENP/Non-RENP (Tables G.5-8).
- Number of students in each of the three Spring 1977 Posttest achievement levels by Fall 1976 pretest achievement level, for RENP/Non-RENP.(Tables G.9 - 12)

TABLES G.1 - 2

Number of Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grades 4, 5 and 6 Combined) by Achievement Level Groups.

TABLES G.3 -4

Number of Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grade 8)

TABLE G.1

CTBS READING TEST: Description of Number of RENP and NON-RENP Students by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest. (Grades 4, 5, and 6 combined.)

	RENP			NON-RENP		
	N	Row%	Col.%	N	Row%	Col.%
Vocabulary						
Loss ≥ 5%	86	52	28	79	48	28
No Gain	55	41	18	79	59	28
Gain ≥ 5%	168	57	54	127	43	44
Total	309		100%	285		100%
Overall χ^2 = 9.32*						
Comprehension						
Loss ≥ 5%	65	47	21	72	53	26
No Gain	54	46	18	63	54	22
Gain ≥ 5%	189	56	61	148	44	52
Total	308		100%	283		100%
Overall χ^2 = 5.01*						
Total						
Loss ≥ 5%	56	57	18	42	43	15
No Gain	89	42	29	121	58	43
Gain ≥ 5%	165	58	53	118	42	42
Total	310		100%	281		100%
Overall χ^2 = 13.29*						

* $p \leq .10$

TABLE G.2

CTBS MATH TEST: Description of Number of RENP and NON-RENP Students by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest. (Grades 4, 5, and 6 combined.)

	RENP			NON-RENP		
	N	Row%	Col.%	N	Row%	Col.%
Computation						
Loss ≥ 5%	41	48	14	44	52	15
No Gain	49	48	16	53	52	19
Gain ≥ 5%	214	54	70	186	46	66
Total	304		100%	283		100%
			Overall χ^2 = 1.45			
Concepts						
Loss ≥ 5%	61	41	20	88	59	31
No Gain	47	47	16	53	53	19
Gain ≥ 5%	192	58	64	141	42	50
Total	300		100%	282		100%
			Overall χ^2 = 12.52*			
Applications						
Loss ≥ 5%	64	50	23	63	50	23
No Gain	40	49	14	42	51	16
Gain ≥ 5%	173	51	63	165	49	61
Total	277		100%	270		100%
			Overall χ^2 = .15			
Total						
Loss ≥ 5%	22	51	8	21	49	8
No Gain	55	43	20	74	57	28
Gain ≥ 5%	198	54	72	172	47	64
Total	275		100%	267		100%
			Overall χ^2 = 4.53			

* $p \leq .10$

TABLE G.3

CTBS READING TEST: Description of Number of RENP Students** by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grade 8).

	RENP	
	N	% Col.
Vocabulary		
Loss ≥ 5%	73	40
No Gain	51	28
Gain ≥ 5%	57	32
Total	181	100%
Comprehension		
Loss ≥ 5%	72	38
No Gain	34	18
Gain ≥ 5%	82	44
Total	188	100%
Total		
Loss ≥ 5%	51	33
No Gain	60	38
Gain ≥ 5%	45	29
Total	156	100%

** Data were not available for NON-RENP students.

TABLE G.4 CTBS MATH TEST: Description of Number of RENP Students** by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grade 8).

	RENP	
	N	% Col.
Computation		
Loss ≥ 5%	62	36
No Gain	54	32
Gain ≥ 5%	55	32
Total	171	100%
Concepts		
Loss ≥ 5%	42	26
No Gain	24	15
Gain ≥ 5%	97	59
Total	163	100%
Application		
Loss ≥ 5%	51	36
No Gain	17	12
Gain ≥ 5%	73	52
Total	141	100%
Total		
Loss ≥ 5%	25	21
No Gain	48	39
Gain ≥ 5%	49	40
Total	122	100%

** Data were not available for NON-RENP students.

TABLES G.5 - 6

Number of Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grades 4, 5, 6 Combined) by achievement level groups..

TABLES G.7 - 8

Number of Percentile Points Gained/Lost from Fall 1976 Pretest to "Spring 1977 Posttest (Grade) by achievement groups.

TABLE G.5

CTBS READING TEST: Description of Number of RENP and NON-RENP Students in Three Pretest Achievement Levels by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest. (Grades 4, 5, and 6 combined.)

PRETEST ACHIEVEMENT LEVEL

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Co
Vocabulary																		
Loss ≥ 5%	21	47	14	24	53	17	25	64	40	14	36	33	40	49	40	41	51	4
No Gain	26	37	18	44	63	31	12	63	19	7	37	16	17	38	17	28	62	2
Gain ≥ 5%	99	57	68	74	43	52	26	54	41	22	46	51	42	58	43	30	42	3
Total	146		100%	142		100%	63		100%	43		100%	99		100%	99		10
	Overall X^2 = 8.40*						Overall X^2 = .99						Overall X^2 = .4.70*					
Comprehension																		
Loss ≥ 5%	23	45	16	28	55	23	18	58	30	13	42	28	24	44	22	31	56	27
No Gain	20	45	14	24	55	20	8	47	14	9	53	19	26	46	24	30	54	26
Gain ≥ 5%	98	58	70	70	42	57	33	57	56	25	43	53	58	52	54	53	48	47
Total	141		100%	122		100%	59		100%	47		100%	108		100%	114		100
	Overall X^2 = 4.14						Overall X^2 = .64						Overall X^2 = 1.25					
Total																		
Loss ≥ 5%	16	55	10	13	45	10	16	62	28	10	38	19	24	56	24	19	44	19
No Gain	39	47	26	44	53	34	12	36	21	21	64	39	38	40	38	56	60	57
Gain ≥ 5%	98	58	64	72	42	56	30	57	52	23	43	43	37	62	37	23	38	23
Total	153		100%	129		100%	58		100%	54		100%	99		100%	98		100%
	Overall X^2 = 2.56						Overall X^2 = 4.63*						Overall X^2 = 7.22*					

* $p \leq .10$

TABLE G.6

CTBS MATH TEST: Description of Number of RENP and NON-RENP Students in Three Pretest Achievement Levels by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest. (Grades 4, 5, 6 combined)

PRETEST ACHIEVEMENT LEVEL

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Co
Computation																		
Loss ≥ 5%	8	42	7	11	58	12	17		17	6	27	7	16	37	18	27	63	2
No Gain	20	45	17	22	55	23	13		13	8	33	9	16	41	18	23	59	2
Gain ≥ 5%	88	55	76	61	45	65	70		70	72	56	84	56	51	64	53	49	51
	116		100%	94		100%	100		100%	86		100%	88		100%	103		100
	Overall X^2 = 3.2						Overall X^2 = 5.38*						Overall X^2 = 3.01					
Concepts																		
Loss ≥ 5%	11	32	9	23	68	19	16	47	21	18	53	35	34	42	34	47	58	42
No Gain	17	46	14	20	54	17	6	40	8	9	60	17	24	50	24	24	50	21
Gain ≥ 5%	95	56	77	75	44	64	54	68	71	25	32	48	43	51	42	41	49	37
Total	123		100%	118		100%	76		100%	52		100%	101		100%	112		100
	Overall X^2 = 6.82 *						Overall X^2 = 7.12*						Overall X^2 = 1.57					
Application																		
Loss ≥ 5%	21	64	17	13	36	10	16	48	24	17	52	37	27	45	33	33	55	34
No Gain	12	43	9	16	57	13	13	65	19	7	35	15	15	47	19	17	53	18
Gain ≥ 5%	95	49	74	97	51	77	38	63	57	22	37	48	39	46	48	46	54	48
Total	128		100%	126		100%	67		100%	46		100%	81		100%	96		100
	Overall X^2 = 2.5						Overall X^2 = 2.3						Overall X^2 = .04					
Total																		
Loss ≥ 5%	12	63	10	7	37	7	7	64	8	4	36	6	3	23	4	10	77	11
No Gain	16	36	14	29	64	27	15	52	18	14	48	21	24	44	33	31	56	33
Gain ≥ 5%	90	56	76	71	44	66	62	56	74	49	44	73	46	47	63	52	53	56
Total	118		100%	107		100%	84		100%	67		100%	73		100%	93		100%
	Overall X^2 = 6.77*						Overall X^2 = 0.47						Overall X^2 = 2.63					

*p ≤ .10

TABLE G.7

CTBS READING TEST: Description of Number of RENP Students** in Three Pretest Achievement Levels by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grade 8).

PRETEST ACHIEVEMENT LEVEL

	Low Achievers			Middle Achievers			High Achievers		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Vocabulary									
Loss > 5%	31	42	33	12	16	39	30	41	53
No Gain	20	39	22	8	16	26	23	45	40
Gain > 5%	42	74	45	11	19	35	4	7	7
Total	93		100%	31		100%	57		100%
Comprehension									
Loss > 5%	37	51	31	13	18	62	22	31	47
No Gain	22	65	18	1	3	5	11	32	23
Gain > 5%	61	74	51	7	9	33	14	17	30
Total	120		100%	21		100%	47		100%
Total									
Loss ≥ 5%	23	45	25	11	22	48	17	33	40
No Gain	35	58	39	7	12	30	18	30	43
Gain ≥ 5%	33	73	36	5	11	22	7	16	17
Total	91		100%	23		100%	42		100%

** Data were not available for NON-RENP students.

TABLE G.8 CTBS MATH TEST: Description of Number of RENP Students** in Three Pretest Achievement Levels by Percentile Points Gained/Lost from Fall 1976 Pretest to Spring 1977 Posttest (Grade 8).

	PRETEST ACHIEVEMENT LEVEL								
	Low Achievers			Middle Achievers			High Achievers		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Computation									
Loss ≥ 5%	32	52	28	5	8	29	25	40	68
No Gain	40	75	34	4	8	24	9	17	24
Gain ≥ 5%	44	80	38	8	15	47	3	5	8
Total	116		100%	17		100%	37		100%
Concepts									
Loss ≥ 5%	13	31	17	11	26	30	18	43	38
No Gain	12	50	15	2	8	5	10	42	21
Gain ≥ 5%	54	56	68	24	25	65	19	20	41
Total	79		100%	37		100%	47		100%
Applications									
Loss ≥ 5%	24	47	29	5	10	50	22	43	46
No Gain	11	65	13	1	6	10	5	30	10
Gain ≥ 5%	48	66	58	4	5	40	21	29	44
Total	83		100%	10		100%	48		100%
Total									
Loss ≥ 5%	9	36	13	3	12	16	13	52	42
No Gain	29	60	40	9	19	47	10	21	32
Gain ≥ 5%	34	69	47	7	14	37	8	16	26
Total	72		100%	19		100%	31		100%

** Data were not available for NON-RENP students

TABLES G.9-10

Number of RENP and NON-RENP Students by Fall 1976 Pretest and Spring 1977 Posttest Achievement Levels (Grades 4, 5 and 6 Combined)

TABLES G.11-12

Number of RENP Students by Fall 1976 Pretest and Spring 1977 Posttest Achievement Levels (Grade 8)

TABLE G.9 CTBS READING TEST: Description of Number of RENP and NON-RENP Students by Fall 1976 Pretest and Spring 1977 Posttest Achievement Levels. (Grades 4, 5 and 6 combined)

POSTTEST ACHIEVEMENT LEVELS

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Vocabulary (Pretest)																		
Low	97	48	76	105	52	86	21	54	49	18	46	41	28	60	20	19	40	16
Middle	25	63	19	15	37	12	12	50	28	12	50	27	26	62	19	16	38	14
High	6	75	5	2	25	2	10	42	23	14	58	32	83	50	61	83	50	70
Total	128		100%	122		100%	43		100%	44		100%	137		100%	118		100%
	3	Overall x^2 = 4.64*					Overall X^2 = .90						Overall X^2 = 2.66					
Comprehension (Pretest)																		
Low	74	43	74	97	57	84	10	67	50	5	33	28	57	74	30	20	26	13
Middle	20	61	20	13	39	11	6	50	30	6	50	33	33	54	18	28	46	19
High	6	50	6	6	50	5	4	36	20	7	64	39	98	49	52	101	51	68
Total	100		100%	116		100%	20		100%	18		100%	188		100%	149		100%
	Overall X^2 = 3.38						Overall x^2 = 2.39						Overall x^2 = 13.83*					
Total (Pretest)																		
Low	93	47	86	105	53	88	23	64	45	13	36	34	37	77	25	11	23	9
Middle	14	54	13	12	46	10	15	44	29	19	56	50	29	56	19	23	44	19
High	1	25	1	3	75	3	13	68	26	6	32	16	85	49	56	89	51	72
Total	108		100%	120		100%	51		100%	38		100%	151		100%	123		100%
	Overall X^2 = 1.27						Overall X^2 = 4.04						Overall X^2 = 12.06*					

* p≤.10

TABLE G.10

CTBS MATH TEST: Description of Number of RENP and NON-RENP Students by Fall 1976 Pretest and Spring 1977 Posttest Achievement Levels. (Grades 4, 5 and 6 combined).

POSTTEST ACHIEVEMENTS LEVELS

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Computation (Pretest)																		
Low	52	43	66	70	57	87	27	64	49	15	36	33	37	80	22	9	20	6
Middle	22	76	28	7	24	9	25	51	45	24	49	52	53	49	31	55	51	35
High	5	63	6	3	38	4	3	30	6	7	70	15	80	46	47	93	54	59
Total	79		100%	80		100%	55		100%	46		100%	170		100%	157		100%

Overall X^2 = 10.89* Overall X^2 = 4.17 Overall X^2 = 17.49*

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Concepts (Pretest)																		
Low	64	49	65	66	51	65	9	43	56	12	57	46	50	56	27	40	44	26
Middle	20	47	20	23	53	23	3	38	19	5	62	19	53	69	29	24	31	15
High	15	56	15	12	44	12	4	31	25	9	69	35	82	47	44	91	53	59
Total	99		100%	101		100%	16		100%	26		100%	185		100%			100%

Overall X^2 = 0.54 Overall X^2 = 0.53 Overall X^2 = 9.91*

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Application (Pretest)																		
Low	86	52	55	79	48	65	14	41	59	20	59	74	28	51	30	27	49	23
Middle	35	59	22	24	41	20	8	67	33	4	33	15	24	57	25	18	43	15
High	36	67	23	18	33	15	2	40	8	3	60	11	43	36	45	75	64	62
Total	157		100%	121		100%	24		100%	27		100%	95		100%	120		100%

Overall X^2 = 3.76 Overall X^2 = 2.53 Overall X^2 = 6.67*

	Low Achievers						Middle Achievers						High Achievers					
	RENP			NON-RENP			RENP			NON-RENP			RENP			NON-RENP		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Total (Pretest)																		
Low	54	44	79	68	56	89	37	60	58	25	40	49	27	66	19	14	34	10
Middle	12	67	18	6	33	8	24	49	38	25	51	49	48	57	34	36	43	26
High	2	50	3	2	50	3	3	75	5	1	25	2	68	43	47	90	57	64
Total	68		100%	76		100%	64		100%	51		100%	143		100%	140		100%

Overall X^2 = 3.17 Overall X^2 = 1.96 Overall X^2 = 8.89*

* $p \leq 10$

TABLE G.11 CTBS READING TEST: Description of Number of RENP Students** by Fall 1976 Pretest and Spring 1977 Posttest Achievement Levels (Grade 8).

	POSTTEST ACHIEVEMENT LEVEL								
	Low Achievers			Middle Achievers			High Achievers		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Vocabulary (Pretest)									
Low	78	84	79	6	6	21	9	10	17
Middle	10	32	10	12	39	43	9	29	17
High	11	19	11	10	18	36	36	63	66
Total	99		100%	28		100%	54		100%
Comprehension (Pretest)									
Low *	92	78	82	11	9	55	15	13	28
Middle	12	57	11	3	14	15	6	29	11
High	8	17	7	6	13	30	33	70	61
Total	112		100%	20		100%	54		100%
Total (Pretest)									
Low	79	87	80	4	4	25	8	9	20
Middle	12	52	12	6	26	38	5	22	12
High	8	19	8	6	14	38	28	67	68
Total	99		100%	16		100%	41		100%

** Data were not available for 8th grade NON-RENP students.

* Posttest level indicaters were missing for 2 pretest low achievers. (Thus the number of low achievers totals 186 instead of 188).

TABLE G.12 CTBS MATH TEST: Description of Number of RENP Students** by Fall 1976 Pretest and Spring 1977 Posttest Achievement Levels (Grade 8).

	POSTTEST ACHIEVEMENT LEVEL								
	Low Achievers			Middle Achievers			High Achievers		
	N	% Row	% Col.	N	% Row	% Col.	N	% Row	% Col.
Computation (Pretest)									
Low	97	84	84	15	13	62	4	3	13
Middle	6	35	5	4	24	17	7	41	23
High	13	35	11	5	14	21	19	51	64
Total	116		100%	24		100%	30		100%
Concepts (Pretest)									
Low	50	63	69	1	1	17	28	35	33
Middle	11	30	15	2	5	33	24	65	29
High	12	26	16	3	6	50	32	68	38
Total	73		100%	6		100%	84		100%
Application (Pretest)									
Low	53	64	74	6	7	74	24	29	39
Middle	5	50	7	1	10	13	4	40	7
High	14	29	19	1	2	13	33	69	54
Total	72		100%	8		100%	61		100%
Total (Pretest)									
Low	9	36	13	3	12	16	13	52	42
Middle	29	60	40	9	19	47	10	21	32
High	34	69	47	7	14	37	8	16	26
Total	72		100%	19		100%	31		100%

** Data were not available for 8th grade NON-RENP students.

APPENDIX H

Description of Gains/Losses Obtained on the RENP Program for Each Grade. These Gains/Losses are Defined by Raw Score Points, Percentile Points and Grade Point Equivalents from 1976 Fall Pretest to 1977 Spring Posttest

The values in these tables represent the gains/losses which a student would achieve if his/her pretest and posttest scores were equivalent to the obtained classroom means. They are guidelines for interpreting the means presented in Tables E.4 - E.13, giving a rough approximation of results using three different metrics.

As an example, according to Table E.1, the 4th grade classroom mean for RENP Pretest Vocabulary was 19; (a student with this score would have a Large City percentile rank of 41 and a grade equivalent of 3.7 - 7th month of 3rd grade). The posttest classroom mean was 25 (a student with this score would have a Large City percentile rank of 38 and a grade equivalent of 4.0). The raw score gain from pretest to posttest was 6 raw score points. The percentile ranking dropped 3 units (from 41 on pretest to 38 on posttest). There was, nevertheless, a gain of .3 with respect to grade equivalence (from 3.7 on pretest to 4.0 on posttest). The student therefore gained 3 months in Vocabulary knowledge within the 7-month span between pretest and posttest.

Estimate of Gains/Losses from Fall 1976 Pretest to Spring 1977 Posttest	Total		Vocabulary		Comprehension	
	RENP	NON-RENP	RENP	NON-RENP	RENP	NON-RENP
Grade 4						
Raw Score Gained/Lost	11	9	6	6	5	3
Percentile Points Gained/Lost	1%	-3%	-3%	-3%	5%	1%
Grade Equivalent Growth per 7 Months in RENP	.6	.4	.3	.3	.9	.6
Grade 5						
Raw Score Gained/Lost	15	11	9	12	8	1
Percentile Points Gained/Lost	16%	7%	7%	21%	27%	1%
Grade Equivalent Growth per 7 months in RENP	1.7	1.1	.9	1.2	3.4	.8
Grade 6						
Raw Score Gained/Lost	8	9	6	6	1	2
Percentile Points Gained/Lost	5	7%	-1%	-1%	7%	10%
Grade Equivalent Growth per 7 Months in RENP	1.8	2.3	.7	.7	1.3	1.7
Grade 8						
Raw Score Gained/Lost			3		-1	
Percentile Points Gained/Lost			-8%	-	-2%	
Grade Equivalent Growth per 7 Months in RENP			-.1	-	.4	

*This table is presented to aid in interpretation of results. The reader is reminded that percentile points gained/lost and years growth were determined by comparing student norms with classroom means. Thus the data must be interpreted as the percentile points gained/lost and years of growth which a student whose mean pretest and posttest scores were equivalent to the classroom means would obtain.

RENP and NON-RENP by Grades 4, 5, 6 and 8* CTBS Math Scores

Estimate of Gains/Losses from Fall 1976 Pretest to Spring 1977 Posttest	Total		Computations		Concepts		Applications	
	RENP	NON-RENP	RENP	NON-RENP	RENP	NON-RENP	RENP	NON-RENP
Grade 4								
Raw Score Gained/Lost	9	11	5	7	2	1	2	2
Percentile Points Gained/Lost	8%	11%	9%	14%	14%	8%	0%	1%
Grade Equivalent Growth per 7 Months in RENP	.8	1.0	.9	1.1	1.4	.9	.5	.6
Grade 5								
Raw Score Gained/Lost	12	11	8	5	2	3	3	2
Percentile Points Gained/Lost	12%	12%	17%	9%	9%	16%	9%	3%
Grade Equivalent Growth per 7 Months in RENP	1.2	1.2	1.3	.8	.8	1.7	1.3	.8
Grade 6								
Raw Score Gained/Lost	14	11	7	5	4	1	4	3
Percentile Points Gained/Lost	16%	11%	13%	8%	24%		13%	8%
Grade Equivalent Growth per 7 Months in RENP	1.6	1.3	1.3	1.0	1.6	.8	1.8	1.4
Grade 8								
Raw Score Gained/Lost			-1		3		1	
Percentile Points Gained/Lost			-4%		13%		0%	
Grade Equivalent Growth per 7 Months in RENP			.1		1.7		.7	

*This table is presented to aid in interpretation of results. The reader is reminded that percentile points gained/lost and years growth were determined by comparing student norms with classroom means. Thus the data must be interpreted as the percentile points gained/lost and years of growth which a student whose mean pretest and posttest scores were equivalent to the classroom means would obtain.

APPENDIX I

Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 to Fall 1977)

APPENDIX I

Numbers and Percentages of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 to Fall 1977)

One of the questions which recurs throughout this study pertains to the number of students who were "in trouble" at time of pretest and were "out of trouble" by the time the posttest was administered. Thus the partitioning of students into appropriate levels was crucial to the analyses. Each student was placed into a "high", "middle", or "low" achievement category based on his/her CTBS pretest scores. The categories were defined as follows:

- High -- Students reading at or above the 50th percentile of large city norms for their grade level.
- Middle -- Students reading below the 50th percentile of large city norms for their grade level but at or above the 50th percentile of large city norms for one grade level below their grade level.
- Low -- Students reading below the 50th percentile of large city norms for one grade level below their present grade level.

Since a major interest in the study was to determine whether or not RENP was helping to close the gap between Washington, D.C. and large city norms, achievement levels were defined relative to the 50th percentile of large city norms.

The following tables present the numbers and percentages of of students in each of the three achievement levels for RENP and NON-RENP by grade. The levels are defined separately for each of the seven CTBS scores. Thus, a student who is a low achiever in Math Total may or may not be a low achiever in Reading Total.

In Tables I.1 and I.2 the numbers include students with Fall 1976, Spring 1977 and Fall 1977 test scores. The 8th grade NON-RENP group includes all students who took the pretest since Spring data were not available. A separate table show 8th grade comparisons of students with Fall'76 and Fall '77 data only.

TABLE I.1 CTBS READING SAMPLE: Numbers and Percentage of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 to Fall 1977)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	31	44	23	32	54	38
Middle	19	28	20	27	39	27
High	19	28	30	41	49	35
Total	69	100	73	100	142	100
5th Grade						
Low	47	60	15	50	62	57
Middle	8	10	7	23	15	14
High	23	30	8	27	31	29
Total	78	100	30	100	108	100
6th Grade						
Low	26	57	7	39	33	52
Middle	6	13	1	5	7	11
High	14	30	10	56	24	37
Total	46	100	18	100	64	100
8th Grade						
Low	55	56	-	-	55	56
Middle	15	15	-	-	15	15
High	29	29	-	-	29	29
Total	99	100	-	-	99	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976, Spring 1977 and Fall 1977 data.

TABLE I.2 CTBS MATH SAMPLE: Numbers and Percentage of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Spring 1977 to Fall 1977)

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
4th Grade						
Low	14	22	14	23	28	22
Middle	27	43	21	34	48	39
High	22	35	27	43	49	39
Total	63	100	62	100	125	100
5th Grade						
Low	26	41	12	43	38	42
Middle	23	37	4	14	27	30
High	14	22	12	43	26	28
Total	63	100	28	100	91	100
6th Grade						
Low	15	41	4	40	19	40
Middle	10	27	4	40	14	30
High	12	32	2	20	14	30
Total	37	100	10	100	47	100
8th Grade						
Low	45	57	-	-	45	57
Middle	13	17	-	-	13	17
High	20	26	-	-	20	26
Total	78	100	-	-	78	100

* Ns for grades 4, 5, 6 and 8th grade (RENP only) include students matched on Fall 1976, Spring 1977 and Fall 1977 data.

TABLE I.3 CTBS READING AND MATH SAMPLE: Numbers and Percentage of Students in Each of Three Pretest Achievement Levels (Fall 1976 to Fall 1977) -- 8th Grade

	RENP		NON-RENP		TOTAL	
	N*	%	N*	%	N*	%
READING						
Low	79	58	47	59	126	58
Middle	22	16	8	10	30	14
High	36	26	25	31	61	28
Total	137	100	80	100	217	100
MATH						
Low	84	67	40	63	124	66
Middle	16	13	13	21	29	15
High	25	20	10	16	35	19
Total	125	100	63	100	188	100

* Ns include students matched on Fall 1976 Pretest and Fall 1977 Posttest data.

APPENDIX J

Mean and Standard Deviations for Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, Non-RENP and Total Samples. Fall/Spring/Fall results are presented in Tables J.1-7; Fall/Fall (8th Grade only) in Tables J.8-9.

TABLE J.1 CTBS Reading TOTAL SCORE: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	70	37	16.0	38	3.6	48	15.3	39	4.1	51	17.1	41	4.5
NON-RENP	73	43	19.3	47	4.0	51	18.3	43	4.3	54	19.4	44	4.7
TOTAL	143	40	17.9	43	3.8	50	16.9	42	4.3	53	18.3	43	4.6
5th Grade													
RENP	78	30	13.1	34	4.1	47	15.7	55	6.1	42	15.4	44	5.7
NON-RENP	30	30	12.7	34	4.1	41	15.4	41	5.3	37	17.3	35	5.1
TOTAL	108	30	12.9	34	4.1	45	15.8	50	5.7	41	16.0	43	5.6
6th Grade													
RENP	46	36	15.7	33	5.0	45	14.3	41	5.7	46	14.7	42	6.2
NON-RENP	18	44	18.6	48	5.9	49	19.5	48	6.4	54	18.7	52	7.3
TOTAL	64	39	16.8	39	5.4	46	15.9	42	5.9	48	16.1	44	6.5
8th Grade													
RENP	99	35	14.6	37	6.9	39	14.8	36	7.5	44	15.0	42	8.3
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	99	35	14.6	37	6.9	39	14.8	36	7.5	44	15.0	42	8.3

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.2 CTBS Reading Vocabulary Total Score: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	70	18	7.7	38	3.5	24	7.8	36	3.9	24	8.3	39	4.5
NON-RENP	72	20	9.1	44	3.8	26	9.2	41	4.1	26	8.5	45	4.9
TOTAL	142	19	8.5	41	3.7	25	8.6	38	4.0	25	8.4	42	4.7
5th Grade													
RENP	77	14	6.9	33	4.2	24	7.9	45	5.3	21	7.6	46	5.8
NON-RENP	30	13	7.0	29	3.9	23	8.5	41	5.2	19	8.9	40	5.3
TOTAL	107	14	6.9	33	4.2	23	8.1	41	5.2	20	8.0	43	5.4
6th Grade													
RENP	46	17	8.1	33	4.9	24	6.4	34	5.3	23	7.5	40	6.3
NON-RENP	18	21	10.2	46	5.8	25	9.5	38	5.6	25	10.4	46	6.8
TOTAL	64	18	8.8	36	5.1	24	7.3	34	5.3	24	8.4	43	6.6
8th Grade													
RENP	99	17	7.9	41	7.3	21	7.6	36	7.5	21	8.1	41	8.3
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	99	17	7.9	41	7.3	21	7.6	36	7.5	21	8.1	41	8.3

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.3 CTBS Reading Comprehension Total Score: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	70	19	9.0	40	3.6	24	9.2	46	4.4	27	10.0	44	4.6
NON-RENP	73	23	10.8	50	4.1	26	10.2	50	4.7	29	11.4	47	4.9
TOTAL	143	21	10.1	45	3.9	25	9.7	48	4.6	28	10.7	46	4.7
5th Grade													
RENP	78	16	7.2	36	4.1	24	9.1	65	7.5	22	8.7	47	5.8
NON-RENP	30	17	6.6	41	4.4	18	7.8	42	5.2	18	9.5	33	4.7
TOTAL	108	16	7.0	36	4.1	22	9.1	58	6.8	21	9.0	44	5.5
6th Grade													
RENP	46	19	8.4	37	5.1	21	8.7	47	6.2	23	7.5	44	6.1
NON-RENP	18	23	9.2	50	6.1	25	10.6	60	7.8	28	9.2	56	7.8
TOTAL	64	20	8.8	40	5.3	22	9.3	51	6.8	25	8.2	49	7.0
8th Grade													
RENP	99	18	7.8	36	6.2	18	8.6	37	7.3	23	7.7	41	8.0
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	99	18	7.8	36	6.2	18	8.6	37	7.3	23	7.7	41	8.0

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.4 CTBS Math Total Score: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	63	55	16.3	38	3.6	64	19.4	47	4.5	73	18.1	39	4.6
NON-RENP	62	60	20.1	45	3.9	71	17.8	56	4.9	76	18.5	42	4.8
TOTAL	125	58	18.4	42	3.8	67	18.8	50	4.7	75	18.3	41	4.7
5th Grade													
RENP	63	41	12.5	39	4.6	53	16.6	51	5.8	50	17.1	39	5.5
NON-RENP	28	41	10.7	39	4.6	52	14.5	50	5.7	58	15.6	52	6.3
TOTAL	91	41	11.9	39	4.6	52	15.9	50	5.7	52	17.0	42	5.6
6th Grade													
RENP	37	50	14.4	39	5.5	66	15.9	58	7.2	60	16.5	42	6.5
NON-RENP	10	48	13.7	36	5.3	58	13.9	47	6.4	62	16.0	44	6.7
TOTAL	47	49	14.1	37	5.4	65	15.7	57	7.1	60	16.2	42	6.5
8th Grade													
RENP	78	38	13.1	35	6.9	42	13.0	40	7.9	49	17.4	42	8.6
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	78	38	13.1	35	6.9	42	13.0	40	7.9	49	17.4	42	8.6

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.5 CTBS Math Computations Score: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	63	28	8.9	36	3.6	34	9.5	49	4.6	39	9.8	35	4.7
NON-RENP	62	30	10.7	41	3.7	37	8.8	56	4.9	40	8.4	38	4.8
TOTAL	125	29	9.9	38	3.7	36	9.2	53	4.8	39	9.1	35	4.7
5th Grade													
RENP	63	21	6.9	36	4.7	28	11.0	51	5.8	28	9.7	41	5.6
NON-RENP	28	22	6.0	40	4.8	27	9.1	48	5.6	30	7.8	47	6.0
TOTAL	91	22	6.6	40	4.8	28	10.4	51	5.8	29	9.1	44	5.8
6th Grade													
RENP	37	28	9.4	41	5.6	36	9.8	57	7.2	33	8.6	42	6.5
NON-RENP	10	26	7.4	36	5.3	31	7.7	44	6.2	34	6.8	45	6.8
TOTAL	47	27	9.0	39	5.5	35	9.6	55	7.0	34	8.2	45	6.8
8th Grade													
RENP	78	18	7.2	34	6.7	18	7.3	33	7.0	25	9.3	46	8.7
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	78	18	7.2	34	6.7	18	7.3	33	7.0	25	9.3	46	8.7

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.6 CTBS Math Concepts Score: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.**
4th Grade													
RENP	63	16	5.0	43	3.7	17	4.4	52	4.9	19	4.8	47	4.9
NON-RENP	62	17	5.4	49	4.0	18	4.8	59	5.4	20	4.9	54	5.4
TOTAL	125	16	5.2	43	3.7	18	4.6	59	5.4	19	4.9	47	4.9
5th Grade													
RENP	63	11	3.4	41	4.5	14	3.8	57	6.4	12	3.5	37	5.0
NON-RENP	28	11	2.9	41	4.5	13	3.4	50	5.7	14	4.0	51	6.2
TOTAL	91	11	3.2	41	4.5	14	3.6	57	6.4	13	3.7	44	5.6
6th Grade													
RENP	37	12	3.0	37	5.0	16	3.3	61	7.6	14	3.8	40	6.2
NON-RENP	10	12	3.6	37	5.0	13	3.2	39	5.7	14	4.0	40	6.2
TOTAL	47	12	3.1	37	5.0	15	3.4	53	7.0	14	3.8	40	6.2
8th Grade													
RENP	78	11	3.8	42	7.4	14	5.4	55	9.1	13	4.5	40	8.4
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	78	11	3.8	42	7.4	14	5.4	55	9.1	13	4.5	40	8.4

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student woul obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a studen would obtain if that student's raw score were equal to the student mean.

TABLE J.7 CTBS Math Applications Score: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade for RENP, NON-RENP and Total Samples.

	N*	Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	63	11	5.0	38	3.5	14	5.0	43	4.3	16	5.7	42	4.6
NON-RENP	61	13	6.1	46	3.9	16	5.8	51	4.8	17	5.7	45	4.8
TOTAL	124	12	5.7	42	3.7	15	5.4	47	4.6	16	5.8	42	4.6
5th Grade													
RENP	63	8	4.7	35	4.2	11	4.7	46	5.4	11	5.2	43	5.5
NON-RENP	28	8	4.2	35	4.2	11	4.3	46	5.4	14	5.2	57	6.7
TOTAL	91	8	4.5	35	4.2	11	4.6	46	5.4	12	5.4	48	5.9
6th Grade													
RENP	37	10	4.6	37	5.0	15	5.0	56	7.3	14	5.0	46	6.7
NON-RENP	10	11	5.3	43	5.5	15	4.7	56	7.3	14	6.6	46	6.7
TOTAL	47	10	4.7	37	5.0	15	4.9	56	7.3	14	5.3	46	6.7
8th Grade													
RENP	78	9	4.3	36	6.7	11	4.8	42	8.0	11	5.6	37	7.9
NON-RENP	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	78	9	4.3	36	6.7	11	4.8	42	8.0	11	5.6	37	7.9

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.8 CTBS READING SCORES: Fall 1976 Pretest and Fall 1977 Posttest Raw Scores for RENP, NON-RENP and Total Samples -- 8th Grade.

		Fall 1976 Pretest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
VOCABULARY									
RENP	137	16	7.8	37	7.0	21	8.0	41	8.3
NON-RENP	80	16	7.6	37	7.0	19	7.8	36	7.9
TOTAL	217	16	7.7	37	7.0	20	8.0	38	8.1
COMPREHENSION									
RENP	137	18	7.8	36	6.2	23	8.1	41	8.0
NON-RENP	80	20	7.7	42	7.2	23	8.4	41	8.0
TOTAL	217	18	7.8	36	6.2	23	8.2	41	8.0
TOTAL SCORE									
RENP	137	34	14.3	35	6.7	44	15.2	42	8.3
NON-RENP	80	36	14.4	39	7.1	42	15.5	39	8.0
TOTAL	217	35	14.3	37	6.9	43	15.3	41	8.2

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

TABLE J.9 CTBS MATH SCORES: Fall 1976 Pretest and Fall 1977 Posttest Raw Scores for RENP, NON-RENP and Total Samples -- 8th Grade.

	N*	Fall 1976 Pretest Scores M	SD	L.C.%**	G.E.***	Fall 1977 Posttest Scores M	SD	L.C.%**	G.E.***
COMPUTATIONS									
RENP	115	17	7.5	30	6.2	23	9.6	41	8.2
NON-RENP	63	20	8.0	41	7.4	26	9.3	48	8.9
TOTAL	178	18	7.7	34	6.7	24	9.5	43	8.4
CONCEPTS									
RENP	115	10	3.8	36	6.8	12	4.5	35	7.9
NON-RENP	63	10	3.5	36	6.8	11	4.0	30	7.4
TOTAL	178	10	3.7	36	6.8	12	4.4	35	7.9
APPLICATIONS									
RENP	115	9	4.2	36	6.7	11	5.5	37	7.9
NON-RENP	63	6	3.8	17	4.5	11	4.7	37	7.9
TOTAL	178	8	4.2	29	5.9	11	5.2	37	7.9
TOTAL SCORES									
RENP	115	36	13.3	31	6.4	46	17.8	39	8.3
NON-RENP	63	36	12.8	31	6.4	48	16.4	41	8.5
TOTAL	178	36	13.1	31	6.4	47	17.3	40	8.4

---

* Number of students across all classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the student mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the student mean.

APPENDIX K

CTBS Reading and Math Total Scores: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, Non-RENP and Total Samples. Fall/Spring/Fall results are presented in Tables K.1 - 8; Fall/Fall results in Tables K.9 - 10.

TABLE K.1 CTBS READING TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	5												
Low		23	1.5	13	2.3	36	7.1	24	3.3	39	3.4	26	3.7
Middle		38	2.4	39	3.6	48	7.2	39	4.1	52	7.9	42	4.6
High		58	6.7	66	5.1	66	6.7	66	5.7	73	5.4	77	7.3
NON-RENP	5												
Low		23	4.7	13	2.3	35	7.5	22	3.3	33	4.7	19	3.3
Middle		37	1.7	38	3.6	49	10.4	40	4.2	55	8.6	45	4.8
High		60	7.5	69	5.3	66	6.6	66	5.7	70	5.8	70	6.4
TOTAL	10												
Low		23	3.3	13	2.3	36	6.9	24	3.3	36	4.7	22	3.5
Middle		38	2.0	39	3.6	49	8.4	40	4.2	54	7.9	44	4.7
High		59	6.8	68	5.2	66	6.3	66	5.7	72	5.5	75	7.0

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.2 CTBS READING TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
5th Grade													
RENP	5												
Low		21	2.7	13	2.9	40	6.4	40	5.1	34	2.3	29	4.6
Middle		33	2.4	41	4.5	50	7.5	61	6.7	44	8.8	48	5.9
High		47	4.4	69	6.3	60	10.2	77	8.1	58	7.5	68	7.7
NON-RENP	3												
Low		20	2.1	11	2.8	27	5.0	16	3.4	25	2.3	13	3.5
Middle		32	0.0	38	4.4	49	2.0	58	6.4	41	1.0	43	5.6
High		46	5.5	67	6.2	58	2.5	75	7.9	57	8.5	67	7.6
TOTAL	8												
Low		21	2.5	13	2.9	35	8.8	30	4.4	31	5.0	24	4.2
Middle		32	1.8	38	4.4	49	5.8	58	6.4	43	6.9	46	5.8
High		46	4.5	67	6.2	59	7.9	76	8.0	58	7.3	68	7.7

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.3 CTBS TOTAL READING SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

	N*	Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
6th Grade													
RENP	4												
Low		27	6.4	17	3.7	35	4.5	24	4.4	37	4.8	28	5.1
Middle		42	1.7	44	5.7	41	21.8	33	5.3	48	3.3	44	6.5
High		57	4.9	67	7.6	62	4.3	70	8.4	64	5.2	66	8.4
NON-RENP	4												
Low		26	5.7	15	3.6	32	11.1	19	4.0	36	10.2	27	5.0
Middle		40	0.0	41	5.5	52	0.0	54	7.0	58	0.0	57	7.7
High		59	2.6	70	7.9	65	2.1	74	8.8	63	10.5	64	8.3
TOTAL	8												
Low		27	5.6	17	3.7	33	8.0	20	4.1	37	7.4	28	5.1
Middle		41	1.4	43	5.6	51	3.9	52	6.9	52	5.8	48	7.0
High		58	3.8	68	7.7	64	3.5	73	8.6	64	7.7	66	8.4

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.4 CTBS READING TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

	N*	Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
8 th Grade													
RENP	8												
Low		22	6.6	14	4.2	32	5.4	24	6.0	35	4.1	28	6.9
Middle		38	1.8	43	7.5	37	10.1	33	7.1	49	10.7	49	9.0
High		53	2.7	65	9.5	50	9.1	53	9.1	57	6.1	60	9.9
NON-RENP	-												
Low		-	-	-	-	-	-	-	-	-	-	-	
Middle		-	-	-	-	-	-	-	-	-	-	-	
High		-	-	-	-	-	-	-	-	-	-	-	
TOTAL	8												
Low		22	6.6	14	4.2	32	5.4	24	6.0	35	4.1	28	6.9
Middle		38	1.8	43	7.5	37	10.1	33	7.1	49	10.7	49	9.0
High		53	2.7	65	9.5	50	9.1	53	9.1	57	6.1	60	9.9

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.5 CTBS MATH TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

	N*	Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
4th Grade													
RENP	5												
Low		34	4.7	12	2.7	39	7.4	18	3.1	51	6.9	18	3.4
Middle		51	3.1	33	3.5	66	2.6	49	4.6	74	8.4	40	4.7
High		72	1.7	59	4.5	78	4.9	67	5.4	88	7.2	67	5.9
NON-RENP	5												
Low		32	6.2	11	2.6	46	13.2	27	3.5	51	16.3	18	3.4
Middle		55	1.1	38	3.6	69	4.1	53	4.8	76	4.4	42	4.8
High		79	7.5	69	5.0	83	6.5	76	5.8	88	6.0	67	5.9
TOTAL	10												
Low		33	5.3	11	2.6	43	10.1	23	3.4	51	11.8	18	3.4
Middle		53	2.7	36	3.5	67	3.6	50	4.7	75	6.4	41	4.7
High		76	6.3	64	4.8	81	6.0	72	5.6	88	6.3	67	5.9

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.6 CTBS MATH TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

	N*	Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
5th Grade													
RENP	5												
Low		30	2.7	14	3.2	42	6.9	31	4.8	43	2.9	27	4.8
Middle		42	1.7	41	4.7	53	5.8	51	5.8	45	6.1	30	5.0
High		61	6.2	75	6.6	75	7.4	83	8.2	75	6.6	75	8.0
NON-RENP	3												
Low		30	3.8	14	3.2	44	6.2	35	5.0	44	5.9	28	4.9
Middle		39	1.0	34	4.3	52	1.5	50	5.7	59	4.5	53	6.4
High		51	2.0	60	5.6	59	2.0	62	6.5	67	6.5	64	7.1
TOTAL	8												
Low		30	2.9	14	3.2	43	6.3	33	4.9	43	3.7	27	4.8
Middle		41	1.9	39	4.6	53	4.3	51	5.8	50	8.8	39	5.5
High		57	6.9	70	6.1	69	9.9	76	7.6	72	7.1	71	7.7

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.7 CTBS MATH TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
6 th Grade													
RENP	4												
Low		36	3.0	16	3.9	58	3.2	47	6.4	55	6.7	35	5.9
Middle		51	1.3	41	5.6	62	7.9	52	6.9	60	3.6	42	6.5
High		66	3.6	63	7.0	78	6.4	75	8.6	67	5.7	50	7.1
NON-RENP	4												
Low		36	6.7	16	3.9	46	4.5	29	5.2	46	1.4	24	5.1
Middle		53	1.7	44	5.7	60	10.6	49	6.6	67	6.6	50	7.1
High		68	2.1	65	7.2	76	2.4	72	8.3	84	.5	79	9.3
TOTAL	8												
Low		36	4.8	16	3.9	52	7.1	38	5.7	51	6.7	30	5.5
Middle		52	1.6	42	5.6	61	8.7	51	6.8	64	6.2	46	6.9
High		67	2.8	64	7.1	77	4.6	74	8.5	76	9.6	63	8.1

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a _student_ would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a _student_ would obtain if that student's raw score were equal to the classroom mean.

TABLE K.8 CTBS MATH TOTAL SCORES: Fall 1976 Pretest, Spring 1977 Posttest and Fall 1977 Posttest Raw Scores by Grade and Achievement Level for RENP, NON-RENP and Total Samples.

		Fall 1976 Pretest Scores				Spring 1977 Posttest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
8th Grade													
RENP	8												
Low		28	2.6	15	4.8	35	6.5	25	6.1	34	13.0	20	5.9
Middle		41	1.7	42	7.4	45	6.3	46	8.4	57	10.4	52	9.3
High		55	6.5	64	9.1	54	9.5	61	9.4	68	10.5	61	9.9
NON-RENP	-												
Low		-	-	-	-	-	-	-	-	-	-	-	
Middle		-	-	-	-	-	-	-	-	-	-	-	
High		-	-	-	-	-	-	-	-	-	-	-	
TOTAL	8												
Low		28	2.6	15	4.8	35	6.5	25	6.1	34	13.0	20	5.9
Middle		41	1.7	42	7.4	45	6.3	46	8.4	57	10.4	52	9.3
High		55	6.5	64	9.1	54	9.5	61	9.4	68	10.5	61	9.9

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.9 CTBS READING TOTAL SCORES: Fall 1976 Pretest and Fall 1977 Posttest Raw Scores by Achievement Level for RENP, NON-RENP and Total Samples -- 8th Grade.

		Fall 1976 Pretest Scores				Fall 1977 Posttest Scores			
	N*	M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
8th Grade									
RENP	9								
Low		24	2.4	17	4.6	35	4.6	28	6.9
Middle		38	1.6	43	7.5	50	10.6	51	9.2
High		53	3.5	65	9.5	58	4.0	61	9.9
NON-RENP	6								
Low		25	4.7	19	4.8	32	3.5	24	6.2
Middle		39	0.8	44	7.6	46	3.6	45	8.2
High		55	8.2	68	9.7	62	8.7	67	10.3
TOTAL	15								
Low		24	3.4	17	4.6	34	4.2	27	6.7
Middle		39	1.5	44	7.6	48	18.5	48	8.8
High		54	5.7	67	9.6	60	6.3	64	10.1

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

TABLE K.10 CTBS MATH TOTAL SCORES: Fall 1976 Pretest and Fall 1977 Posttest Raw Scores by Achievement Level for RENP, NON-RENP and Total Samples -- 8th Grade.

	N*	Fall 1976 Pretest Scores				Fall 1977 Posttest Scores			
		M	SD	L.C.%**	G.E.***	M	SD	L.C.%**	G.E.***
8th Grade									
RENP	6								
Low		27	3.2	13	4.6	36	3.6	23	6.4
Middle		41	1.4	42	7.4	58	10.3	53	9.4
High		55	5.8	64	9.1	68	8.3	61	10.0
NON-RENP	9								
Low		27	4.0	13	4.6	37	6.0	24	6.1
Middle		42	0.3	44	7.7	61	10.1	55	9.6
High		60	3.7	69	9.5	71	5.7	63	10.1
TOTAL	15								
Low		27	3.4	13	4.6	37	4.5	24	6.9
Middle		41	1.1	42	7.4	59	10.0	53	9.4
High		57	5.7	66	9.3	69	7.3	61	10.0

---

* Number of classrooms.

** Percentile rankings for large city norms. These represent the percentile ranking which a student would obtain if that student's raw score were equal to the classroom mean.

*** Grade point equivalents of the student mean. This represents the grade point equivalent which a student would obtain if that student's raw score were equal to the classroom mean.

APPENDIX L

Teacher Classroom Observation and Interview Instruments

The Classroom Observation and Interview Instruments consist of the following:

- Classroom summary information
- Physical environment information
- Snapshot record sheet
- Anecdote prompt sheet
- Anecdotal record--summary sheet
- Observer's questions for RENP teachers
- Observer's questions for NON-RENP teachers

CLASSROOM OBSERVATION INSTRUMENT

STANFORD RESEARCH INSTITUTE/UNIV. OF TEXAS R & D CENTER FOR TEACHER ED.

CLASSROOM SUMMARY INFORMATION

1. Teacher number ___ ___ ___
2. Site number ___ ___ ___
3. Grade(s) ___ ___ ___
4. Observer number ___ ___
5. Today's date ___ ___/___ ___ month day
6. Number of children enrolled ___ ___
7. Number of children absent today ___ ___
8. Number of children in lab today ___ ___
9. Number of adults other than teachers in the classroom today ___
10. Total class duration (minutes) ___ ___
11. Reading Class ___
12. Math Class ___
13. Other Class (Identify) ______

PHYSICAL ENVIRONMENT INFORMATION

Seating Patterns (check all that apply)

___ Movable tables and chairs for seating purposes

___ Movable desks in groups

___ Stationary desks in rows

___ Individual study carrels

___ Floor seating

For each item below, check the appropriate column(s).

Not Present	Present	Used today	Instructional Materials
___	___	___	Textbook 1
___	___	___	Textbook 2
___	___	___	Textbook 3
___	___	___	Teacher prepared workbook/ worksheets
___	___	___	Manipulative materials/ games
___	___	___	Story Books
___	___	___	Math/Reading kits
___	___	___	Library media guide
___	___	___	Children's own work

Not Present	Present	Used today	Audio-Visual Equipment and Materials
___	___	___	Calculators/computers
___	___	___	Math/Reading tape cassettes
___	___	___	Films/filmstrips
___	___	___	Television -- Reading/ Math program
			General Equipment and Materials
___	___	___	Reading bulletin boards
___	___	___	Reading progress chart
___	___	___	Math bulletin boards
___	___	___	Math progress chart

SRI - UTR&D

Snapshot

MATERIAL

Time started ___________

Subject Identifier

___ Math
___ Reading
___ English
___ Science
___ Social Studies

	01 Textbook					02 Workbook Worksheet Paper					03 Test					04 Games/ Manipulative Materials					05 Reading or Math Kit					06 AV Equipment Calculator Learning Machine					07 Overhead Chalkboard					08 Non-Curricular Material					09 No Material				
	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4	No.	1	2	3	4
01 Reading Silently																																													
02 Reading Aloud																																													
03 Practice Drill																																													
04 Going over problems on tests																																													
05 Testing																																													
06 Integrated Instruction																																													
07 Receiving explanation, instructions																																													
08 Nonacademic social interaction																																													
09 Classroom management																																													
10 Transition																																														
11 Unoccupied child																																													
12 Discipline																																													

Column 1 - Number in group   Column 2 - I N   Column 3 - T A V i   Column 4 - D P O N X

Anecdote Prompt Sheet

These are the categories/hints to keep in mind while you're doing field notes:

Teacher

Lesson objectives
Choice among activities
Pre-planning of lesson
Organized execution of lesson
Awareness of child non-involvement
Action regarding child non-involvement
Friendly/unfriendly

Child

Attitude toward lesson
Understands objectives of lesson
Contribution to organization
Involved in lesson
Otherwise involved
Friendly/unfriendly

Comment on these "notions" and provide the evidence based on verbal, or non-verbal behavior or contextual clues in the summary sheet. If the class breaks into small groups, follow the teacher and be clear about which students you are making notes about.

Anecdotal Record - Summary Sheet

Date of Observation ________________ School Number ____________________

Observer __________________________ Grade __________________________

Teacher Number ________________

I. Fill in immediately after the observation: Provide comments about; and give evidence for your comments about the following topics:

A. Regarding the teacher:

1. Describe what you can about the lesson objectives and activities.

2. Was the lesson pre-planned?

3. Was the lesson organized?

4. Describe the teachers' awareness of and activities related to children not involved in the lesson.

5. Was the teacher acting in a positive way or a negative way toward the students?

B. Regarding the students:

1. Describe the attitude of the students toward the lesson.

2. Did the students understand the objectives of the lesson?

3. Did the students contribute to the organization of the lesson?

4. Were the students involved in the lesson or involved in something else?

5. Were the students acting in a positive way or a negative way toward the teacher?

II. Fill in tentatively after each observation: After a set of observations on one teacher and after the whole round of observations fill this in permanently:

1. What was/were the lesson(s) about?

2. Was there any part of the class that you thought was particularly good?

3. Was there any part of the class that you thought was particularly weak?

4. What do you think are the teacher's greatest strengths?

5. In what area do you think the teacher needs some help?

6. Was the affective ambience of the classroom primarily positive or negative? On what do you base this judgement?

Date________________________

Observer____________________

OBSERVER'S QUESTIONS FOR RENP TEACHERS

1. Usually, about how many students are present in the class every day? ________________

2. Do you have profiles of individual students on file in the classroom?
Yes ____ No ___ (If not, in the lab? Yes ___ No____).

3. What are the kinds of information that are usually included in these profiles?

PRT/PMT data ____
Other diagnostic test data ______________________________
Counselor's comments___________________________________
My own comments_______________________________________
Other____

4. How do you use data from the PRT and PMT? (If answer is I don't use them go to number 5, if not skip number 5.

I don't use them _______________
I use them to prescribe appropriate learning activities __________
I use them for grouping purposes ____________
I use them to judge student growth __________
Other

5. Why don't you use the data from the PRT and PMT?

6. Do your students use the reading and/or math labs?

Yes _____________
No _____________ If no, why?

7. For what purposes do students use the reading and/or math labs?

specific skills ______________________________________
general remediation __________________________________
classroom management ________________________________
acceleration ____
other____

8. How do you determine what students to send to the reading and/or math labs?

   a. tests ________________
   b. consultation with parents, other teachers, counselors, Principal, aides, Program Facilitators
   c. informal observations
   d. home assignments
   e. other

9. During the development of your training plan, did you and your Program Facilitator work together?

   Yes ______________________
   No, I did it myself __________________(why?)
   No, Program Facilitator did it herself ______________ (why?)
   No, I don't have a training plan. ______________ (why?)
   Other ________________

10. What areas of teaching have you worked on with your Program Facilitator?

   Classroom management
   Linguistic approach to reading
   Phonics
   Comprehension
   Individualization
   and the like

11. About how many hours per week do you spend receiving RENP training?

12. Are you familiar with the objectives of the individual school plan developed by the unit Task Force for your school?

13. If yes, can you tell me what its objectives are?

14. If yes, do you use these objectives in your teaching? If no, why? If yes, how?

15. How do you diagnose individual reading and/or math levels?

    (Kinds of observations)
    (Kinds of tests)
    (Kinds of charts)
    and the like

16. Has RENP helped improve your diagnostic skills? If no, why? If yes, how? (in what areas)

17. Have you developed individual learning prescriptions for students in your class?

    Yes _______ (describe) ie. materials, workbooks, mimeos, etc. commercial vs. teacher generated

    No _______ (why not?)

18. With what kinds of services are you provided by RENP to help you deal with students' problems?

    Community Organizers (describe) ______________________________

    Referrel Services (describe ______________________________

19. Are these services helpful? If not, why? If yes, how?

20. You probably have students with a lot of different ability levels in your class---How do you deal with this problem?

    _________ group by ability levels
    _________ individual instruction
    _________ don't deal with, not a problem

21. How do you decide what level of the PMT or PRT to give to a specific student?

    Observations _______________
    Inventories _______________

Date ____________________

Observer __________________

OBSERVERS' QUESTIONS FOR NON-RENP TEACHERS

1. Usually, about how many students are present in the class everyday? _________

2. Is there somewhere in their school where you can send students who need remedial work? If you could, describe it to me? If not, do you wish some kind of faculty was available?

3. How do you use data from the PRT and PMT? (If answer is I don't use them go to number 4, if not skip number 4.

   I don't use them ________________
   I use them to prescribe appropriate learning activities ________
   I use them for grouping purposes ___________
   I use them to judge student growth _________
   Other

4. Why don't you use the data from the PRT and PMT?

5. How do you decide what level of the PMT or PRT to give to a specific student?

   Observations ____________
   Inventories ____________

6. Have you received any inservice training since September? If yes, could you describe it to me? - Was it helpful? Why or why not?

APPENDIX M

Definition of Variables Describing Classroom Activities, Materials and Interactions

ACKNOWLEDGMENT

This procedure for recording activities and materials in a classroom is a composite of work done by the staff of the University of Texas, Research and Development Center and Stanford Research Institute. Acknowledgment is especially given to Dr. Susan Loucks of the UTR&D who modified the original "Snapshot" into its present format, making it possible to record a more comprehensive picture of the classroom.

INTRODUCTION

The Classroom Snapshot (structured observation instrument) is a means to record the configuration of a classroom at a specific point in time. The classroom information recorded are: (1) activities occuring; (2) materials being used; (3) grouping patterns; (4) adult participation, and (5) students independent of adults.

The number of groupings recorded can vary with the structure of the classroom. If all students are involved in the same activity using the same type of materials, and the teacher is with the group, only one grouping would be recorded on the Snapshot. If the students are working in several groups, on various activities, and using different materials, a recording must be made for each unique group.

On the actual Snapshot form, twelve types of classroom activities are listed down the left side of the page and the nine types of materials are listed across the top, which form a total of 108 boxes on the page (see Appendix L). When in the classroom the observer selects the appropriate box for a particular group and records the required information in that box, a recording will be made for each unique grouping that is observed.

Each box on the page contains six columns, four of which are numbered. Information to be recorded in each of these columns follows:

Column 1 - number of students present in the group.

Column 2 - whether students in group are interacting/non-interacting

Column 3 - identification of any adult who is with the group or if students are working independently.

Column 4 - identifies the role of any adult

The first two columns are used as follows:

"NO" - If more than one group is observed which would be recorded with the exact information, then the number of groups is recorded in the column labeled "NO".

"Unlabeled Column" - This column is used to identify variations for reading or math instructions.

DEFINITIONS OF VARIABLES DESCRIBING CLASSROOM ACTIVITIES, MATERIALS AND INTERACTIONS

Classroom Activities

On Task is the sum of six classroom activities: reading silently, reading aloud, practice drill, going over problems on test, testing and integrated instruction. These classroom activities are considered "on task" since the students are directly involved with the subject matter or task to be learned.

- *Reading Silently* is recorded when students are reading silently to themselves, either as a group or individually.
- *Reading Aloud* is recorded when students are asked to read aloud a section from a book or a part from a play. Reading aloud can be in unison or students taking turns in reading various sections from a book. This activity also includes the teacher or student(s) reading aloud with the rest of the class following along with the reading material.
- *Practice Drill, Written Assignments* is recorded when students are (1) verbally involved in repetitive or rote work and (2) writing papers, doing computation or any other written work. This activity is coded when students are using flash cards or a game which has a designated structure or rules.
- *Going Over Problems on Tests* is recorded when students receive information or feedback regarding work they have completed. This code is used only when it is obvious to the observer that the students are receiving feedback. This is determined by the presence of some completed *written* work, either in the possession of the teacher or students. It is not used for review of a previous lesson.
- *Testing* is recorded when students are required to take a test or quiz about the subject matter, either as a group or as individuals. The test can be a written test with directions on the

student's paper, a sheet of paper with directions on a chalkboard or orally from the teacher, such as a spelling test.

- Integrated Instruction is used only when the teacher has assigned a lesson which involves math or reading instruction within another content area, such as reading through a social studies lesson, math within a science class. Integrated instruction must involve the crossing of disciplines.

Off Task is the sum of six classroom activities: receiving explanations/instructions, non-academic social interaction, classroom management, transition, unoccupied child and discipline. These classroom activities are considered "off task" since the students are not directly involved with subject matter or the task to be learned.

- Receiving Explanations, Instructions is coded when an adult is informing a grouping of students about a subject. This activity is also used for discussions.
- Non-Academic Social Interaction describes two or more persons who are not involved in another activity but are interacting socially with one another, e.g., talking, whispering, laughing, hitting, "fooling around". This activity is also used for non-academic games or teacher directed non-academic discussions.
- Classroom Management is recorded for routine, purposeful classroom activities or events that occur every day, such as distribution of materials, setting up equipment and furniture, taking roll, gathering up papers and equipment, correcting papers and cleaning up. This activity is also used for students getting their materials to begin their work or teachers' explanations of which materials are required or how they are to be used. A guiding rule for this activity would be any "getting the show on the road" types of activities. When a student is waiting for assistance from an adult to continue an activity, this activity is used.

- Transition is used when adults and/or students are "between" activities and purposeful instructional activity is not occurring, such as, coming in from another room or outside and general "milling around" that occurs between activities. Any imposed waiting because of instructions from an adult is coded in this activity.
- Unoccupied Child refers to a child sitting or standing alone or wandering about with no evident purpose or goal. This does not include the child who momentarily looks up from work.
- Discipline is recorded when a student is being punished by such means as isolation from the rest of the class or being sent out of the classroom. If an adult discusses at great length a student's unacceptable behavior to the degree that it becomes an activity, this code may be used.

Classroom Materials

- Textbook. This refers to printed materials (which students do not write in directly) specifically designed to instruct through sequential or graduated lessons or chapters.
- Workbook, worksheet, paper. This refers to consummable materials that students work with to develop concepts or skills. A workbook is distinguished from a textbook in that workbooks contain more emphasis on exercises than reading. This could be a commercially prepared workbook, a dittoed worksheet, or a blank sheet of paper on which students work problems or write answers. If students are copying work from the chalkboard onto their paper, or if students are working from a textbook and writing on a piece of paper, this material category is used.
- Test. This refers to printed materials used specifically for evaluation purposes. It also includes a blank paper on which the child writes test problems or answers.

- Games/Manipulative Materials. This refers to games or manipulative materials that provide practice, drill, or instruction. Any physical object that the student manipulates for learning is included here. Standard classroom materials are not coded (e.g., pencil, crayons, scissors and erasers). Rulers and compasses are coded here.
- Math/Reading Kit. This refers to commercially or teacher prepared sets of materials, usually in a package, box or file, that children can be assigned to work in, independent of adults. These materials are defined as self-paced for the student. The student is aware of the kit's existence. If the students are working on ditto sheets from a kit but do not have access to the kit, code under workbook, worksheets, etc.
- AV Equipment, Calculator, Learning Machine. This includes any mechanical equipment that is used to teach or provide practice. It includes filmstrips, films, cassette tapes, hand calculators, computers, etc. It does not include overhead projectors or chalkboards. If students are working with audio tapes which are part of a kit, code under this material.
- Overhead, Chalkboard. This category is coded only when no other materials are being used, e.g., when a teacher is writing problems on the chalkboard and children are working them on paper, category workbook, worksheet, paper is coded. However, when the teacher is writing problems on the overhead and the students are working them mentally, this category is used. If students are working on a worksheet using the overhead projector, code as workbook, worksheet, paper.
- Non-Curriculum Material. This refers to any reading material which is not specified as part of the regular curriculum of the classroom such as library books or comic books. Dictionaries are coded under textbook.
- No Material. This is coded when no materials at all are being used.

Size of Groups indicates the number of children in a group within the classroom. Group is defined as children in close proximity doing the same thing.

- One student working separately from other students.
- Two students working in close proximity.
- Small group consists of three to eight students working in close proximity.
- Large group consists of nine or more students working in close proximity.

Interaction/Noninteraction indicates whether or not the students are interacting. Teacher directed discussion groups are coded as interacting. Non-verbal sharing is coded as noninteracting.

Teacher Behavior indicates the role of the teacher in the classroom.

- Directing Children in Activity indicates that the teacher has the group's attention and is in a directing or supervising role.
- Not Present indicates the teacher is not present with the group of children being described.

Size of Groups Plus Interaction with Teacher/Students indicates whether or not the students are interacting with the teacher or other students and the size of the group in which the students are working.

- Noninteraction -- students working indpendently without teacher and not interacting.
- Interaction -- students working independently without teacher and interacting with other students.
- Interaction with teacher -- students working and interacting with teacher.

SCORING PROCEDURE

Each of the variables described above was scored for each teacher by obtaining the average percent of students who were involved in a particular type of activity or were using a particular set of materials. These scores were averaged across the three time samples within the two observations and then across the two observations.

For purposes of establishing the reliability of the Snapshot, four observers simultaneously observed the same classroom, completing three Snapshots using the instrument in two separate settings: the teaching of reading and the teaching of math. The four raters moved clockwise around the room, rating the same classroom situation. This is the data upon which all reliabilities were calculated.

Reliability was estimated using analysis of variance techniques in which the columns related to the various raters and the rows related to the various items or scores on the ratings. The methodology follows that described by Bob Ebel in Psychometrika (Volume 16, No. 4, p. 407 - 423). Using this method, reliabilities for three scores were estimated as follows:

- Activity Index was defined as the number of students engaged in a particular activity averaged across the number of Snapshots for that teacher. For reading, the reliability was .74 for the six activities coded by the four raters.
- Materials Index was defined as the number of students engaged in the use of a particular material averaged across the number of Snapshots for that teacher. For reading, the reliability was .99 for the three materials coded by the four raters.
- Group size/interaction Index was defined as the number of students engaged in an activity in a particular group size (one, two, small group, large group) and interacting as follows: non-interacting working independently; interacting working independently without teacher; interacting with the teacher; and noninteracting with the teacher present.

For reading, seven group size/interaction modes were coded with a reliability of .65 for On Task activities; six group size/interaction modes were coded with a reliability of .70 for OFF Task activities.

The noted absence of reported reliabilities for the math observations was due to the situation observed. The teacher was teaching the entire group (27 students) from the blackboard. As a result, all observers were in 100 percent agreement.

In summary, it was felt that the Snapshot was reliable and thus was used in the RENP evaluation.

APPENDIX N

Results of Analysis of Variance of Teacher Observation Data

APPENDIX N

Results of Analysis of Variance of Variables Describing Classroom Activities, Materials and Interactions

The analysis of variance model employed is a treatment (RENP/NON-RENP) by grade (4th, 5th, 6th and 8th) by class nested within grade design. The unit of analysis is the classroom, which meets the requirement of independence of observation for the analysis of variance model.

The dependent variables are those describing classroom activities, materials and interactions defined in Appendix M.

Each variable score represents the average percent* of students who were involved in a particular activity, using a particular material or were engaged in interaction/non-interaction.

---

*Due to the accumulation of rounding errors, percentages do not always sum to exactly 100%.

TABLES N.1-2	Summary of Output from Analysis of Variance Using Classroom Activities and Materials As the Dependent Variables Including Grades 4, 5, 6 and 8. The Teaching of Math
TABLES N.3-4	Summary of Output from Analysis of Variance Using Classroom Activities and Materials As the Dependent Variables Including Grades 4, 5, 6 and 8. The Teaching of Reading
TABLES N.5-6	Summary of Output from Analysis of Variance Using Classroom Activities and Materials As the Dependent Variables Including Grades 4, 5, 6 and 8. The Teaching of Reading and Math

TABLE N.1 Summary of Output from Analysis of Variance Using Classroom Activities and Materials as the Dependent Variables Including Grades 4, 5, 6 and 8.

	F - Levels		
	Main Effects		Interaction
	Treatment DF=1	Grade DF=3	Treatment X Grade DF=3
ACTIVITIES			
ON TASK ACTIVITIES	.10	1.71	.70
Reading Silently	-	-	-
Reading Aloud	.00	1.00	.70
Practice Drill	.52	1.42	1.09
Going Over Problems On Test	.01	.97	.62
Testing	.39	.73	.13
Integrated Instruction	-	-	-
OFF TASK ACTIVITIES	.14	1.62	.69
Receiving Explanation, Instructions	.05	.36	.95
Nonacademic Social Interaction	.62	8.85*	3.69*
Classroom Management	.14	1.31	.33
Transition	2.96*	1.06	5.94*
Unoccupied Child	1.87	1.80	2.36*
Discipline	-	-	-
USE OF MATERIALS			
Textbook	.03	.56	.90
Workbook, Worksheet, Paper	.47	.52	.22
Test	.09	.50	1.00
Games/Manipulative Materials	2.23	1.19	.21
Reading or Math Kit	-	-	-
AV Equipment, Calculators, Learning Machine	-	-	-
Overhead Chalkboard	.01	.22	.46
Non-curricular Material	-	-	-
No Materials	.71	1.21	.07

* Significant at $p \leq .10$

- Zero-cells

TABLE N .2 Summary of Output from Analysis of Variance Using Size of Groupings and Interactions as the Dependent Variables Including Grades 4, 5, 6 and 8.

	F - Levels		
	Main Effects		Interaction
	Treatment DF=1	Grade DF=3	Treatment X Grade DF=3
SIZE OF GROUPS			
One Student	.58	.84	1.74
Two Students	.16	.22	1.47
Small Group	1.36	.06	2.07
Large Group	.11	2.65*	.97
INTERACTION			
Interaction	1.24	1.97	.68
Noninteraction	1.21	1.96	.64
TEACHER BEHAVIOR			
Directing Children in Activity	.00	10.31*	1.07
Not Present--Used with no Interaction	3.56*	1.09	2.39*
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENTS			
Noninteraction--Students Working Independently	3.05*	2.47*	.63
One Student	.02	2.06	.37
Two Students	1.48	1.61	2.94*
Small Group	1.29	1.19	.85
Large Group	1.97	1.01	.30
Interaction--Students Working Independently	.05	2.56*	4.17*
One Student	-	-	-
Two Students	.08	.93	3.61*
Small Group	.06	.60	4.29*
Large Group	-	-	-
Interaction With Teacher	2.01	4.25*	.78
One Student	-	-	-
Two Students	-	-	-
Small Group	.01	.42	1.16
Large Group	.83	1.22	1.88

* Significant at $p \leq .10$

- Zero cells

TABLE N.3 Summary of Output from Analysis of Variance Using Classroom Activities and Materials as the Dependent Variables Including Grades 4, 5, 6 and 8.

	F - Levels		
	Main Effects		Interaction
	Treatment DF=1	Grade DF=3	Treatment X Grade DF=3
ACTIVITIES			
ON TASK ACTIVITIES	.23	1.41	.25
Reading Silently	4.44*	3.38*	1.31
Reading Aloud	1.68	.79	1.26
Practice Drill	3.61*	.46	1.72
Going Over Problems On Test	.26	.52	.86
Testing	.13	.06	1.58
Integrated Instruction	-	-	-
OFF TASK ACTIVITIES	.25	1.31	.25
Receiving Explanation, Instructions	.48	.77	.93
Nonacademic Social Interaction	.68	.72	1.57
Classroom Management	.02	.67	.92
Transition	.01	.92	.20
Unoccupied Child	.13	.81	1.36
Discipline	-	-	-
USE OF MATERIALS			
Textbook	6.69*	1.36	1.41
Workbook, Worksheet, Paper	1.48	.32	.34
Test	.12	.82	.79
Games/Manipulative Materials	-	-	-
Reading or Math Kit	.91	.49	1.77
AV Equipment, Calculators, Learning Machine	-	-	-
Overhead Chalkboard	.01	1.84	2.62*
Non-curricular Material	.94	.90	.35
No Materials	.85	1.01	1.36

* Significant at $p \leq .10$

- Zero-cells

TABLE N.4 Summary of Output from Analysis of Variance Using Size of Groupings and Interactions as the Dependent Variables Including Grades 4, 5, 6 and 8.

	F - Levels		
	Main Effects		Interaction
	Treatment DF=1	Grade DF=3	Treatment X Grade DF=3
SIZE OF GROUPS			
One Student	.74	.02	.43
Two Students	.01	.58	.45
Small Group	.30	1.11	.94
Large Group	.00	.36	.90
INTERACTION			
Interaction	.90	.57	1.67
Noninteraction	.95	.51	1.61
TEACHER BEHAVIOR			
Directing Children in Activity	.07	.71	1.13
Not Present--Used with no Interaction	.10	.46	1.06
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENTS			
Noninteraction--Students Working Independently	.83	.62	1.41
One Student	.39	.12	.49
Two Students	.05	.91	1.66
Small Group	5.15*	.18	.15
Large Group	.00	.25	.12
Interaction--Students Working Independently	1.17	.30	.72
One Student	-	-	-
Two Students	.17	.74	2.26
Small Group	2.93*	.36	1.20
Large Group	-	-	-
Interaction With Teacher	.04	.38	1.05
One Student	-	-	-
Two Students	-	-	-
Small Group	.39	2.55*	2.59*
Large Group	.01	.59	1.98

* Significant at $p \leq .10$

- Zero-cells

TABLE N.5 Summary of Output from Analysis of Variance Using Classroom Activities and Materials as the Dependent Variables Including Grades 4, 5, 6 and 8.

	F - Levels		
	Main Effects		Interaction
	Treatment DF=1	Grade DF=3	Treatment X Grade DF=3
ACTIVITIES			
ON TASK ACTIVITIES	.91	.71	.10
Reading Silently	2.20	1.70	.74
Reading Aloud	1.24	.34	.54
Practice Drill	4.91*	.96	.61
Going Over Problems On Test	.04	.45	.74
Testing	.54	.15	.93
Integrated Instruction	-	-	-
OFF TASK ACTIVITIES	1.00	.72	.10
Receiving Explanation, Instructions	.00	.48	.17
Nonacademic Social Interaction	.49	2.17	1.14
Classroom Management	.23	1.80	.82
Transition	3.29*	1.75	1.00
Unoccupied Child	4.82*	.61	1.46
Discipline	-	-	-
USE OF MATERIALS			
Textbook	.50	.34	.84
Workbook, Worksheet, Paper	.50	.26	.23
Test	.43	.07	.55
Games/Manipulative Materials	1.68	1.60	.24
Reading or Math Kit	-	-	-
AV Equipment, Calculators, Learning Machine	-	-	-
Overhead Chalkboard	.00	.37	.84
Non-curricular Material	.53	.99	.20
No Materials	1.04	1.56	1.05

* Significant at $p \leq .10$

- Zero-cells

TABLE N.6 Summary of Output from Analysis of Variance Using Size of Groupings and Interactions as the Dependent Variables Including Grades 4, 5, 6 and 8.

	F - Levels		
	Main Effects		Interaction
	Treatment DF=1	Grade DF=3	Treatment X Grade DF=3
SIZE OF GROUPS			
One Student	.41	.25	.19
Two Students	.43	.14	.31
Small Group	2.08	.24	1.02
Large Group	1.43	.13	.48
INTERACTION			
Interaction	.60	.58	1.48
Noninteraction	.69	.59	1.43
TEACHER BEHAVIOR			
Directing Children in Activity	1.05	1.44	.13
Not Present--Used with no Interaction	1.17	1.36	.08
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENTS			
Noninteraction--Students Working Independently	2.22	.42	1.14
One Student	.82	.30	.24
Two Students	.02	.32	1.35
Small Group	4.81*	.34	.24
Large Group	.19	.15	.97
Interaction--Students Working Independently	.02	1.60	1.96
One Student	-	-	-
Two Students	.97	.87	4.18*
Small Group	.14	.81	2.33*
Large Group	.26	1.94	.10
Interaction With Teacher	1.19	1.46	.15
One Student	-	-	-
Two Students	-	-	-
Small Group	.09	2.49*	.33
Large Group	1.05	.20	.17

* Significant at $p \leq .10$

- Zero-cells

APPENDIX O

Means and Standard Deviations of Variables Describing Classroom Activities, Materials and Interactions--for Grades 4, 5, 6 and 8 combined by RENP, Non-RENP and Total Group. Results for the teaching of Math are presented in Tables 0.1-2, the teaching of Reading in Tables 0.3-4, and the teaching of Reading and Math in 0.5-6.

THE TEACHING OF MATH

TABLE 0.1 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grades 4, 5, 6 and 8

	RENP (N=14)		NON-RENP (N=17)		TOTAL (N=31)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	58	30	55	20	54	25
Reading Silently	1	5	0	1	1	3
Reading Aloud	2	5	2	5	2	5
Practice Drill	48	25	44	23	46	24
Going Over Problems on Test	5	10	4	7	4	8
Testing	2	5	5	15	4	11
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	43	28	46	20	43	24
Receiving Explanation, Instructions	27	21	24	20	25	20
Nonacademic Social Interaction	6	8	7	9	6	8
Classroom Management	5	7	6	8	5	8
Transition	2	5	5	6	3	6
Unoccupied Child	3	4	5	5	4	4
Discipline	1	1	0	0	0	1
USE OF MATERIALS						
Textbook	18	30	16	21	17	25
Workbook, Worksheet, Paper	39	27	46	32	43	30
Test	4	10	6	13	5	12
Games/Manipulative Materials	10	17	3	9	6	14
Reading or Math Kit	0	1	0	0	0	1
AV Equipment, Calculators, Learning Machine	0	0	2	7	1	5
Overhead Chalkboard	22	25	23	25	22	25
Non-curricular Material	0	0	0	0	0	0
No Materials	8	8	5	7	7	7

TABLE 0.2 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grades 4, 5, 6 and 8

	RENP (N=14)		NON-RENP (N=17)		TOTAL (N=31)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	6	7	8	8	7	7
Two Students	7	8	6	6	7	7
Small Group	20	21	29	22	25	22
Large Group	52	36	58	30	55	32
INTERACTION						
Interaction	71	30	64	15	61	23
Noninteraction	30	20	37	15	32	18
TEACHER BEHAVIOR						
Directing Children in Activity	53	29	53	18	53	23
Not Present--Used with no Interaction	33	23	48	18	41	21
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	29	16	39	14	34	16
One Student	5	5	4	6	4	5
Two Students	3	5	5	7	4	6
Small Group	7	9	13	13	10	12
Large Group	10	13	17	12	13	12
Interaction--Students Working Independently	11	10	10	14	10	12
One Student	0	0	0	1	0	1
Two Students	4	5	3	5	4	5
Small Group	5	6	5	9	5	8
Large Group	1	3	1	5	1	4
Interaction With Teacher	61	18	52	18	56	18
One Student	2	2	1	1	1	2
Two Students	1	2	0	1	0	1
Small Group	9	14	9	13	9	14
Large Group	50	24	42	24	46	24

TABLE 0.3 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grades 4, 5, 6 and 8

	RENP (N=13)		NON-RENP (N=18)		TOTAL (N=31)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	70	21	64	18	66	19
Reading Silently	4	7	9	10	7	9
Reading Aloud	7	8	11	13	9	11
Practice Drill	51	26	36	19	42	23
Going Over Problems on Test	3	8	2	5	3	6
Testing	4	9	5	11	5	10
Integrated Instruction	0	0	1	2	0	2
OFF-TASK ACTIVITIES	31	21	37	18	34	19
Receiving Explanation, Instructions	15	16	20	18	18	17
Nonacademic Social Interaction	3	3	2	3	2	3
Classroom Management	4	6	5	8	5	7
Transition	7	10	6	8	6	8
Unoccupied Child	2	3	4	4	3	4
Discipline	1	1	0	0	0	1
USE OF MATERIALS						
Textbook	11	11	27	22	20	19
Workbook, Worksheet, Paper	62	12	55	18	58	16
Test	4	8	3	6	3	7
Games/Manipulative Materials	0	1	1	2	1	2
Reading or Math Kit	2	5	1	2	1	4
AV Equipment, Calculators, Learning Machine	1	2	1	5	1	4
Overhead Chalkboard	5	9	6	11	5	10
Non-curricular Material	6	14	1	4	3	10
No Materials	10	13	6	9	8	11

TABLE 0.4 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grades 4, 5, 6 and 8

	RENP (N=13)		NON-RENP (N=18)		TOTAL (N=31)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	11	10	8	7	9	9
Two Students	9	8	9	6	9	7
Small Group	27	16	29	15	28	15
Large Group	53	29	54	20	54	24
INTERACTION						
Interaction	62	17	53	15	57	16
Noninteraction	38	17	47	15	43	16
TEACHER BEHAVIOR						
Directing Children in Activity	50	17	46	14	48	15
Not Present--Used with no Interaction	50	17	54	14	52	15
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	39	16	47	15	44	16
One Student	9	9	7	7	8	8
Two Students	5	8	5	5	5	6
Small Group	9	7	16	9	13	9
Large Group	17	17	19	20	18	19
Interaction--Students Working Independently	11	12	7	7	9	9
One Student	1	2	0	0	0	1
Two Students	3	4	4	3	3	3
Small Group	6	7	2	5	4	6
Large Group	1	4	1	3	1	3
Interaction With Teacher	51	17	48	15	49	15
One Student	1	1	1	1	1	1
Two Students	1	2	1	2	1	2
Small Group	12	12	9	10	10	11
Large Group	36	22	37	16	37	19

TABLE 0.5 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grades 4, 5, 6 and 8

	RENP (N=22)		NON-RENP (N=20)		TOTAL (N=42)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	66	26	59	20	61	23
Reading Silently	3	6	5	7	4	7
Reading Aloud	4	7	8	12	6	10
Practice Drill	52	24	38	20	45	23
Going Over Problems on Test	4	8	3	5	3	7
Testing	3	7	6	11	4	9
Integrated Instruction	0	0	0	1	0	1
OFF TASK ACTIVITIES	35	23	42	20	37	22
Receiving Explanation, Instructions	20	18	20	18	20	18
Nonacademic Social Interaction	4	5	5	9	4	7
Classroom Management	4	6	5	6	5	6
Transition	4	6	6	6	5	6
Unoccupied Child	2	3	5	4	4	4
Discipline	1	1	0	0	0	1
USE OF MATERIALS						
Textbook	14	23	18	15	16	19
Workbook, Worksheet, Paper	49	26	55	22	52	24
Test	5	10	3	5	4	8
Games/Manipulative Materials	5	11	2	5	3	9
Reading or Math Kit	1	4	0	2	1	3
AV Equipment, Calculators, Learning Machine	0	2	1	4	1	3
Overhead Chalkboard	14	22	15	17	15	20
Non-curricular Material	3	8	1	3	2	6
No Materials	9	11	6	7	8	9

TABLE 0..5 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grades 4, 5, 6 and 8

	RENP (N=22)		NON-RENP (N=20)		TOTAL (N=42)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	8	8	9	7	8	8
Two Students	8	8	9	6	8	7
Small Group	23	18	30	15	26	17
Large Group	61	28	52	21	57	25
INTERACTION						
Interaction	68	18	61	10	62	15
Noninteraction	33	18	40	10	38	15
TEACHER BEHAVIOR						
Directing Children in Activity	56	19	49	14	53	17
Not Present--Used with no Interaction	44	19	51	14	48	17
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	33	17	41	10	37	14
One Student	6	7	8	7	7	7
Two Students	4	6	4	5	4	5
Small Group	9	8	16	9	12	9
Large Group	14	15	13	13	14	14
Interaction--Students Working Independently	11	11	11	11	11	11
One Student	0	1	0	0	0	1
Two Students	3	4	4	4	4	4
Small Group	6	6	5	7	5	7
Large Group	2	5	2	5	2	5
Interaction With Teacher	57	19	50	14	53	17
One Student	1	2	1	1	1	1
Two Students	1	1	1	1	1	1
Small Group	9	11	9	9	9	10
Large Group	45	23	38	15	42	20

APPENDIX P

Means and Standard Deviations of Variables Describing Classroom Activities, Materials and Interactions by Grade for RENP, Non-RENP and Total Group. Results for the teaching of Math are presented in Tables P.1-8; the teaching of Reading in Tables P.9-16; and the teaching of Reading and Math in Tables P.17-24.

TABLE P.1 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 4

	RENP (N= 3)		NON-RENP (N= 5)		TOTAL (N= 8)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	78	10	64	19	69	17
Reading Silently	0	1	1	1	1	1
Reading Aloud	0	0	0	0	0	0
Practice Drill	69	8	46	31	55	27
Going Over Problems on Test	4	8	6	11	5	9
Testing	4	8	12	26	9	20
Integrated Instruction	0	1	0	0	0	0
OFF TASK ACTIVITIES	23	10	37	19	32	17
Receiving Explanation, Instructions	11	10	18	19	15	14
Nonacademic Social Interaction	0	0	4	4	2	4
Classroom Management	1	2	7	9	5	7
Transition	8	9	1	2	4	6
Unoccupied Child	1	1	8	5	5	6
Discipline	2	2	0	0	1	2
USE OF MATERIALS						
Textbook	11	20	16	29	14	24
Workbook, Worksheet, Paper	35	30	30	37	32	33
Test	13	22	2	4	6	13
Games/Manipulative Materials	18	16	10	16	13	15
Reading or Math Kit	1	2	0	0	0	1
AV Equipment, Calculators, Learning Machine	0	0	6	13	4	10
Overhead Chalkboard	17	17	31	32	26	27
Non-curricular Material	0	1	0	0	0	0
No Materials	6	6	6	9	6	8

TABLE P.2 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 4

	RENP (N= 3)		NON-RENP (N= 5)		TOTAL (N= 8)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	7	4	8	8	8	7
Two Students	10	14	6	8	7	10
Small Group	32	25	18	27	24	26
Large Group	50	37	68	33	62	33
INTERACTION						
Interaction	71	21	64	16	66	17
Noninteraction	30	22	36	16	35	17
TEACHER BEHAVIOR						
Directing Children in Activity	56	29	61	19	59	21
Not Present--Used with no Interaction	44	30	40	19	41	21
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	30	20	36	16	34	17
One Student	5	4	8	8	7	7
Two Students	5	8	3	6	4	6
Small Group	8	11	12	20	10	16
Large Group	11	20	14	14	13	15
Interaction--Students Working Independently	14	14	3	3	7	10
One Student	0	0	0	0	0	0
Two Students	5	7	3	3	4	4
Small Group	9	9	0	0	4	6
Large Group	0	0	0	0	0	0
Interaction With Teacher	57	29	61	19	60	21
One Student	1	2	1	1	1	1
Two Students	0	1	0	0	0	0
Small Group	16	18	6	9	10	13
Large Group	39	20	54	26	48	23

7
0

TABLE P.3 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 5

	RENP (N= 3)		NON-RENP (N= 2)		TOTAL (N= 5)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	42	27	62	11	50	30
Reading Silently	0	0	0	0	0	0
Reading Aloud	2	4	8	11	5	7
Practice Drill	26	13	50	6	36	16
Going Over Problems on Test	13	18	4	5	9	14
Testing	0	0	0	0	0	0
Integrated Instruction	0	0	1	1	0	0
OFF TASK ACTIVITIES	58	43	39	12	51	31
Receiving Explanation, Instructions	37	19	14	3	28	19
Nonacademic Social Interaction	10	6	0	0	6	7
Classroom Management	7	12	9	11	8	10
Transition	0	0	15	4	6	8
Unoccupied Child	5	3	1	1	3	3
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	21	36	1	1	13	28
Workbook, Worksheet, Paper	35	34	56	18	43	28
Test	0	0	7	9	3	6
Games/Manipulative Materials	10	17	1	1	6	13
Reading or Math Kit	0	0	0	0	0	0
AV Equipment, Calculators, Learning Machine	0	0	0	0	0	0
Overhead Chalkboard	25	32	30	35	27	29
Non-curricular Material	0	0	0	0	0	0
No Materials	10	10	6	8	8	8

TABLE P.4 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 5

	RENP (N= 3)		NON-RENP (N= 2)		TOTAL (N= 5)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	12	10	6	0	10	8
Two Students	10	5	4	0	8	5
Small Group	29	31	16	4	23	23
Large Group	49	46	76	4	60	36
INTERACTION						
Interaction	85	11	73	20	80	14
Noninteraction	15	11	28	21	20	15
TEACHER BEHAVIOR						
Directing Children in Activity	75	17	73	20	74	16
Not Present--Used with no Interaction	25	18	28	21	26	16
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	11	8	28	21	18	15
One Student	8	6	5	1	7	5
Two Students	0	0	4	0	2	2
Small Group	3	3	9	6	5	5
Large Group	0	0	11	15	4	9
Interaction--Students Working Independently	14	11	0	0	9	11
One Student	0	0	0	0	0	0
Two Students	8	6	0	0	5	6
Small Group	7	7	0	0	4	6
Large Group	0	0	0	0	0	0
Interaction With Teacher	75	17	74	21	75	16
One Student	4	4	2	1	3	3
Two Students	3	3	0	0	2	2
Small Group	19	24	7	9	14	19
Large Group	49	46	66	11	56	34

TABLE P5 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 6

	RENP (N= 5)		NON-RENP (N= 7)		TOTAL (N=12)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	63	26	54	16	58	20
Reading Silently	0	0	0	0	0	0
Reading Aloud	3	8	2	5	3	6
Practice Drill	56	22	45	19	50	20
Going Over Problems on Test	0	0	3	5	2	4
Testing	3	6	5	9	4	7
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	38	26	47	16	43	20
Receiving Explanation, Instructions	23	15	31	21	28	19
Nonacademic Social Interaction	4	7	3	4	3	5
Classroom Management	8	8	7	9	7	8
Transition	1	1	3	6	2	5
Unoccupied Child	2	3	3	3	3	3
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	6	14	19	21	14	19
Workbook, Worksheet, Paper	47	29	52	26	50	26
Test	3	6	11	19	7	15
Games/Manipulative Materials	11	25	0	0	5	16
Reading or Math Kit	0	0	0	0	0	0
AV Equipment, Calculators, Learning Machine	0	0	0	0	0	0
Overhead Chalkboard	28	32	16	14	21	23
Non-curricular Material	0	0	0	0	0	0
No Materials	6	7	3	3	4	5

TABLE P.6 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 6

	RENP (N=5)		NON-RENP (N=7)		TOTAL (N=12)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	5	6	5	5	5	5
Two Students	7	8	5	4	6	5
Small Group	13	12	34	23	26	21
Large Group	76	22	57	28	65	26
INTERACTION						
Interaction	68	12	58	15	62	14
Noninteraction	33	12	42	15	38	14
TEACHER BEHAVIOR						
Directing Children in Activity	61	15	51	9	55	12
Not Present--Used with no Interaction	39	15	50	9	45	12
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	31	9	45	12	39	13
One Student	4	5	4	4	4	4
Two Students	4	5	3	3	4	4
Small Group	8	10	20	8	15	10
Large Group	15	10	18	12	17	11
Interaction--Students Working Independently	9	7	7	12	8	10
One Student	0	0	0	1	0	1
Two Students	3	3	2	2	2	2
Small Group	4	6	5	10	5	8
Large Group	2	5	0	0	1	3
Interaction With Teacher	62	14	49	7	54	12
One Student	1	1	1	1	1	1
Two Students	0	0	0	0	0	0
Small Group	1	2	10	20	6	15
Large Group	59	16	39	19	47	20

TABLE p.7 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 3

	RENP (N=3)		NON-RENP (N=3)		TOTAL (N=6)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	47	30	40	33	43	29
Reading Silently	6	10	0	0	3	7
Reading Aloud	2	3	0	0	1	2
Practice Drill	33	32	35	31	34	28
Going Over Problems on Test	6	10	4	8	5	8
Testing	0	0	0	0	0	0
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	53	30	62	33	58	28
Receiving Explanation, Instructions	38	34	24	32	31	30
Nonacademic Social Interaction	10	12	24	6	17	11
Classroom Management	0	0	0	1	0	0
Transition	0	0	6	4	3	4
Unoccupied Child	5	6	8	2	6	4
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	42	51	17	19	30	37
Workbook, Worksheet, Paper	34	30	53	46	44	36
Test	0	0	0	0	0	0
Games/Manipulative Materials	0	0	0	0	0	0
Reading or Math Kit	0	0	0	0	0	0
AV Equipment, Calculators, Learning Machine	0	0	0	0	0	0
Overhead Chalkboard	11	20	20	35	16	26
Non-curricular Material	0	0	0	0	0	0
No Materials	12	12	10	10	11	10

TABLE P.8 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 3

	RENP (N=3)		NON-RENP (N= 3)		TOTAL (N=6)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	2	3	14	13	8	11
Two Students	3	6	13	7	8	8
Small Group	11	18	44	9	27	22
Large Group	54	31	30	29	24	27
INTERACTION						
Interaction	59	23	63	15	38	32
Noninteraction	41	35	38	14	29	26
TEACHER BEHAVIOR						
Directing Children in Activity	50	21	31	9	21	18
Not Present--Used with no Interaction	50	37	70	9	46	36
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	41	17	38	14	39	14
One Student	1	2	0	0	1	2
Two Students	2	3	14	10	8	9
Small Group	9	15	2	2	5	10
Large Group	8	14	22	6	15	12
Interaction--Students Working Independently	9	13	33	10	21	17
One Student	0	0	0	0	0	0
Two Students	1	2	10	9	5	7
Small Group	0	0	16	6	8	10
Large Group	0	0	7	12	3	8
Interaction With Teacher	50	14	31	9	41	15
One Student	1	1	2	2	1	1
Two Students	1	2	1	2	1	2
Small Group	3	3	12	5	7	6
Large Group	46	17	17	9	31	20

TABLE P.9 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 4

	RENP (N=3)		NON-RENP (N=5)		TOTAL (N=8)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	74	21	76	15	75	16
Reading Silently	3	5	16	11	11	11
Reading Aloud	8	7	9	10	9	8
Practice Drill	63	11	39	22	48	21
Going Over Problems on Test	0	0	4	4	3	4
Testing	0	0	7	10	4	8
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	27	20	25	15	26	16
Receiving Explanation, Instructions	17	15	7	10	11	12
Nonacademic Social Interaction	1	2	3	3	3	3
Classroom Management	6	10	8	11	7	10
Transition	2	3	3	6	3	5
Unoccupied Child	1	1	4	5	3	4
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	7	6	29	11	21	15
Workbook, Worksheet, Paper	67	8	59	13	62	12
Test	0	0	0	0	0	0
Games/Manipulative Materials	0	0	1	3	1	2
Reading or Math Kit	6	10	0	0	2	6
AV Equipment, Calculators, Learning Machine	0	0	0	0	0	0
Overhead Chalkboard	19	9	6	7	11	10
Non-curricular Material	0	0	1	1	0	1
No Materials	1	1	4	6	3	5

TABLE P.10 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 4

	RENP (N=3)		NON-RENP (N=5)		TOTAL (N=8)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	11	11	9	12	10	11
Two Students	5	6	7	3	6	4
Small Group	21	23	31	14	32	19
Large Group	68	40	54	21	53	28
INTERACTION						
Interaction	70	17	48	19	56	20
Noninteraction	31	17	52	19	44	20
TEACHER BEHAVIOR						
Directing Children in Activity	59	28	44	20	50	22
Not Present--Used with no Interaction	42	28	56	20	51	22
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	35	12	53	19	46	18
One Student	11	12	9	11	10	11
Two Students	0	1	3	2	2	2
Small Group	7	7	16	11	13	10
Large Group	17	7	25	30	22	23
Interaction--Students Working Independently	11	11	5	3	7	7
One Student	0	0	0	0	0	0
Two Students	4	6	4	3	4	4
Small Group	7	6	0	1	3	5
Large Group	0	0	0	0	0	0
Interaction With Teacher	59	28	44	19	50	22
One Student	0	1	0	1	0	1
Two Students	1	1	0	0	0	1
Small Group	7	13	15	11	12	11
Large Group	51	38	29	21	37	28

TABLE P.11 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 5

	RENP (N=5)		NON-RENP (N= 3)		TOTAL (N=8)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	66	29	67	24	66	25
Reading Silently	8	11	15	5	10	9
Reading Aloud	6	10	11	9	8	9
Practice Drill	40	34	41	20	40	28
Going Over Problems on Test	5	11	0	0	3	8
Testing	8	11	0	0	5	9
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	35	30	34	23	35	26
Receiving Explanation, Instructions	19	19	20	18	20	17
Nonacademic Social Interaction	3	4	0	0	2	3
Classroom Management	0	0	6	5	2	4
Transition	10	15	7	10	9	12
Unoccupied Child	2	3	1	2	2	3
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	11	13	46	27	24	25
Workbook, Worksheet, Paper	61	10	47	18	56	14
Test	8	11	0	0	5	9
Games/Manipulative Materials	0	0	0	0	0	0
Reading or Math Kit	1	3	0	0	1	2
AV Equipment, Calculators, Learning Machine	2	4	0	0	1	3
Overhead Chalkboard	1	2	0	0	1	2
Non-curricular Material	9	18	0	0	6	15
No Materials	8	6	7	11	8	8

TABLE P.12 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 5

	RENP (N=5)		NON-RENP (N=3)		TOTAL (N=8)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	9	12	10	4	10	9
Two Students	9	7	13	5	10	6
Small Group	32	16	35	14	33	14
Large Group	50	25	43	19	48	22
INTERACTION						
Interaction	66	16	52	17	61	17
Noninteraction	34	16	48	17	39	17
TEACHER BEHAVIOR						
Directing Children in Activity	54	11	48	17	52	12
Not Present--Used with no Interaction	46	10	53	17	49	12
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	34	16	49	18	40	17
One Student	6	9	9	4	7	8
Two Students	3	4	9	4	5	5
Small Group	9	11	19	8	13	10
Large Group	16	23	12	12	14	18
Interaction--Students Working Independently	12	14	3	1	9	12
One Student	2	3	0	1	2	2
Two Students	4	4	2	1	4	3
Small Group	6	8	0	0	4	7
Large Group	0	0	0	0	0	0
Interaction With Teacher	54	11	50	17	53	13
One Student	1	2	0	1	1	1
Two Students	1	2	3	3	2	3
Small Group	17	10	17	15	17	11
Large Group	35	10	30	21	33	13

TABLE P.13 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 6

	RENP (N=2)		NON-RENP (N=7)		TOTAL (N=9)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	67	18	53	10	56	13
Reading Silently	5	3	1	3	2	4
Reading Aloud	9	13	6	8	7	8
Practice Drill	36	25	37	18	37	18
Going Over Problems on Test	8	10	3	8	4	8
Testing	9	13	4	7	5	8
Integrated Instruction	0	0	1	4	1	3
OFF TASK ACTIVITIES	34	19	48	11	45	13
Receiving Explanation, Instructions	8	11	28	20	24	20
Nonacademic Social Interaction	6	4	2	3	3	3
Classroom Management	7	4	4	8	5	7
Transition	6	6	9	9	9	8
Unoccupied Child	8	4	4	5	5	5
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	22	13	25	23	24	21
Workbook, Worksheet, Paper	67	3	54	25	57	22
Test	0	0	4	8	3	7
Games/Manipulative Materials	2	3	1	3	1	3
Reading or Math Kit	0	0	0	0	0	0
AV Equipment, Calculators, Learning Machine	0	0	3	9	3	8
Overhead Chalkboard	0	0	5	7	4	7
Non-curricular Material	1	1	0	0	0	1
No Materials	10	8	8	12	9	11

TABLE P.14 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 6

	RENP (N=2)		NON-RENP (N=7)		TOTAL (N=9)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	17	16	6	6	9	9
Two Students	12	11	8	8	9	8
Small Group	35	13	25	15	27	15
Large Group	37	39	61	20	55	24
INTERACTION						
Interaction	44	9	53	13	51	12
Noninteraction	56	8	47	13	49	12
TEACHER BEHAVIOR						
Directing Children in Activity	39	5	42	10	41	9
Not Present--Used with no Interaction	61	4	57	10	58	9
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	56	5	48	13	50	12
One Student	15	13	6	5	8	8
Two Students	10	11	6	7	6	7
Small Group	11	0	17	8	16	8
Large Group	21	29	19	20	20	20
Interaction--Students Working Independently	4	0	10	9	8	8
One Student	0	0	0	0	0	0
Two Students	3	1	2	2	2	2
Small Group	1	1	5	7	4	7
Large Group	0	0	3	5	2	4
Interaction With Teacher	40	4	45	13	44	11
One Student	1	1	0	1	0	1
Two Students	0	0	1	1	1	1
Small Group	24	15	4	4	8	11
Large Group	16	10	39	12	34	15

TABLE P.15 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 3

	RENP (N=3)		NON-RENP (N=3)		TOTAL (N=6)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	74	14	68	25	71	18
Reading Silently	0	0	8	14	4	10
Reading Aloud	4	8	25	25	15	20
Practice Drill	69	12	23	23	46	30
Going Over Problems on Test	0	0	0	0	0	0
Testing	0	0	13	22	6	16
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	28	14	33	26	31	19
Receiving Explanation, Instructions	12	20	22	20	17	19
Nonacademic Social Interaction	0	1	2	3	1	2
Classroom Management	7	9	0	1	4	7
Transition	6	6	4	6	5	6
Unoccupied Child	1	1	5	6	3	5
Discipline	2	3	0	0	1	2
USE OF MATERIALS						
Textbook	6	10	9	16	8	12
Workbook, Worksheet, Paper	56	22	60	8	58	15
Test	6	10	6	11	6	9
Games/Manipulative Materials	0	0	0	0	0	0
Reading or Math Kit	0	0	3	5	2	4
AV Equipment, Calculators, Learning Machine	0	0	0	0	0	0
Overhead Chalkboard	0	0	13	23	7	16
Non-curricular Material	11	19	6	8	9	13
No Materials	22	23	4	4	13	18

TABLE p.16 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 3

	RENP (N=3)		NON-RENP (N= 3)		TOTAL (N=6)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	11	8	9	8	10	7
Two Students	12	14	9	4	10	9
Small Group	20	13	19	12	19	12
Large Group	58	31	65	11	62	21
INTERACTION						
Interaction	59	22	67	8	63	16
Noninteraction	42	22	34	8	38	16
TEACHER BEHAVIOR						
Directing Children in Activity	43	19	58	7	51	15
Not Present--Used with no Interaction	56	19	42	7	50	15
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	42	22	34	8	38	16
One Student	9	7	7	7	8	6
Two Students	9	13	1	2	5	9
Small Group	9	3	13	12	11	8
Large Group	16	16	13	14	14	14
Interaction--Students Working Independently	15	17	10	5	12	12
One Student	0	0	0	0	0	0
Two Students	1	2	7	3	4	4
Small Group	9	9	2	2	6	7
Large Group	5	8	0	0	2	6
Interaction With Teacher	45	19	58	7	52	15
One Student	2	1	2	1	2	1
Two Students	2	2	1	2	1	2
Small Group	2	2	4	7	3	5
Large Group	38	23	52	6	45	16

TABLE p.17 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 4

	RENP (N=5)		NON-RENP (N=5)		TOTAL (N=10)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	74	14	70	16	72	14
Reading Silently	1	2	9	5	5	5
Reading Aloud	4	5	4	5	4	5
Practice Drill	64	8	43	25	54	21
Going Over Problems on Test	3	6	5	7	4	6
Testing	3	6	9	15	6	11
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	27	14	31	16	29	14
Receiving Explanation, Instructions	16	11	12	11	14	10
Nonacademic Social Interaction	1	2	3	3	2	3
Classroom Management	4	7	8	8	6	7
Transition	3	5	2	4	3	4
Unoccupied Child	1	1	6	3	3	3
Discipline	1	2	0	0	1	1
USE OF MATERIALS						
Textbook	10	14	23	14	17	15
Workbook, Worksheet, Paper	50	29	45	20	47	24
Test	8	17	1	2	4	12
Games/Manipulative Materials	11	15	6	8	8	12
Reading or Math Kit	4	7	0	0	2	5
AV Equipment, Calculators, Learning Machine	0	0	3	7	2	5
Overhead Chalkboard	15	11	19	15	17	13
Non-curricular Material	0	0	0	1	0	0
No Materials	3	4	5	6	4	5

TABLE P .18 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 4

	RENP (N=5)		NON-RENP (N= 5)		TOTAL (N=10)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	9	8	9	9	9	8
Two Students	9	11	6	5	7	8
Small Group	30	23	25	14	28	18
Large Group	53	37	61	17	55	27
INTERACTION						
Interaction	71	19	57	15	64	18
Noninteraction	30	19	45	15	37	18
TEACHER BEHAVIOR						
Directing Children in Activity	58	28	52	16	55	22
Not Present--Used with no Interaction	43	29	48	17	46	22
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working independently	30	19	45	15	37	18
One Student	8	9	8	8	8	8
Two Students	3	6	3	4	3	5
Small Group	8	9	14	12	11	10
Large Group	10	11	20	17	15	14
Interaction--Students Working Independently	14	12	4	3	9	10
One Student	0	0	0	0	0	0
Two Students	5	6	4	3	5	5
Small Group	8	7	0	1	4	6
Large Group	0	0	0	0	0	0
Interaction With Teacher	59	29	53	17	56	22
One Student	1	1	1	1	1	1
Two Students	1	1	0	0	0	1
Small Group	14	15	11	1	12	11
Large Group	43	31	41	16	42	23

TABLE P .19 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 5

	RENP (N=6) Mean	RENP (N=6) SD	NON-RENP (N=3) Mean	NON-RENP (N=3) SD	TOTAL (N=9) Mean	TOTAL (N=9) SD
ACTIVITIES						
ON TASK ACTIVITIES	66	38	63	13	64	31
Reading Silently	5	10	9	3	7	8
Reading Aloud	5	9	9	8	6	8
Practice Drill	40	27	43	14	41	23
Going Over Problems on Test	8	14	1	2	6	11
Testing	6	11	0	0	4	9
Integrated Instruction	0	0	0	1	0	0
OFF TASK ACTIVITIES	37	32	39	13	38	26
Receiving Explanation, Instructions	22	19	21	14	21	17
Nonacademic Social Interaction	5	5	0	0	3	4
Classroom Management	2	4	6	5	3	5
Transition	6	9	11	6	8	8
Unoccupied Child	3	3	1	1	2	2
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	14	17	27	9	18	15
Workbook, Worksheet, Paper	50	25	52	7	51	20
Test	6	11	2	4	5	9
Games/Manipulative Materials	5	12	0	1	3	10
Reading or Math Kit	1	2	0	0	0	1
AV Equipment, Calculators, Learning Machine	1	3	0	0	1	3
Overhead Chalkboard	12	24	10	15	12	21
Non-curricular Material	4	8	0	0	3	7
No Materials	9	7	9	10	9	7

TABLE P.20 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 5

	RENP (N=6)		NON-RENP (N=3)		TOTAL (N=9)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	8	9	9	3	8	7
Two Students	8	6	11	6	9	6
Small Group	28	21	30	11	29	18
Large Group	57	30	52	20	55	25
INTERACTION						
Interaction	72	19	61	3	69	16
Noninteraction	28	19	39	4	32	16
TEACHER BEHAVIOR						
Directing Children in Activity	63	17	59	5	52	14
Not Present--Used with no Interaction	37	17	42	5	39	14
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	28	19	39	4	31	16
One Student	6	6	8	4	6	5
Two Students	2	3	8	4	4	4
Small Group	8	10	14	3	10	8
Large Group	12	22	10	9	11	18
Interaction--Students Working Independently	10	11	2	1	7	10
One Student	1	1	0	1	1	1
Two Students	5	4	1	1	3	3
Small Group	5	7	0	0	3	6
Large Group	0	0	0	0	0	0
Interaction With Teacher	63	17	60	4	62	14
One Student	2	3	1	0	1	2
Two Students	1	2	2	2	1	2
Small Group	16	13	15	14	15	12
Large Group	45	26	42	11	44	21

TABLE P.21 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 6

	RENP (N= 5)		NON-RENP (N= 6)		TOTAL (N=11)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	68	19	53	10	60	16
Reading Silently	1	1	1	2	1	1
Reading Aloud	5	8	5	6	5	6
Practice Drill	56	21	39	14	47	19
Going Over Problems on Test	1	3	3	4	2	4
Testing	4	6	4	6	4	6
Integrated Instruction	0	0	1	2	0	2
OFF TASK ACTIVITIES	33	19	48	11	41	16
Receiving Explanation, Instructions	17	11	24	20	21	16
Nonacademic Social Interaction	3	5	3	4	3	4
Classroom Management	7	7	8	7	7	7
Transition	2	2	9	6	6	6
Unoccupied Child	3	4	5	4	4	4
Discipline	0	0	0	0	0	0
USE OF MATERIALS						
Textbook	7	13	14	16	11	14
Workbook, Worksheet, Paper	51	30	62	21	57	25
Test	3	6	5	6	4	6
Games/Manipulative Materials	6	13	1	2	3	9
Reading or Math Kit	0	0	0	0	0	0
AV Equipment, Calculators, Learning Machine	0	0	2	5	1	4
Overhead Chalkboard	27	33	12	9	19	23
Non-curricular Material	0	0	0	0	0	0
No Materials	7	6	6	6	6	6

TABLE P.22 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 6

	RENP (N=5)		NON-RENP (N=6)		TOTAL (N=11)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	7	9	7	5	7	7
Two Students	7	8	9	8	8	8
Small Group	18	9	33	19	24	18
Large Group	70	26	52	24	60	25
INTERACTION						
Interaction	63	14	59	8	61	11
Noninteraction	37	14	42	7	40	11
TEACHER BEHAVIOR						
Directing Children in Activity	57	15	47	11	52	13
Not Present--Used with no Interaction	43	15	53	10	49	13
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	35	12	44	5	40	10
One Student	5	7	6	5	6	6
Two Students	4	6	6	6	5	6
Small Group	9	9	20	7	15	9
Large Group	16	13	12	12	14	12
Interaction--Students Working Independently	8	7	11	8	10	7
One Student	0	0	0	0	0	0
Two Students	3	3	2	2	2	2
Small Group	3	6	7	7	6	7
Large Group	2	5	2	3	2	4
Interaction With Teacher	58	15	47	9	52	13
One Student	1	1	1	1	1	1
Two Students	0	0	1	1	1	1
Small Group	6	8	7	12	6	10
Large Group	51	20	38	15	44	18

TABLE P.23 Percent of Student Time by Classroom Activities and Materials for RENP, NON-RENP and Total Samples -- Grade 3

	RENP (N=6)		NON-RENP (N= 6)		TOTAL (N=12)	
	Mean	SD	Mean	SD	Mean	SD
ACTIVITIES						
ON TASK ACTIVITIES	60	26	54	31	57	27
Reading Silently	3	7	4	10	4	8
Reading Aloud	3	5	13	21	8	15
Practice Drill	51	29	29	25	40	29
Going Over Problems on Test	3	7	2	5	2	6
Testing	0	0	6	16	3	11
Integrated Instruction	0	0	0	0	0	0
OFF TASK ACTIVITIES	41	25	47	30	44	27
Receiving Explanation, Instructions	25	29	23	24	24	25
Nonacademic Social Interaction	5	10	12	13	9	12
Classroom Management	4	7	0	1	2	5
Transition	3	5	5	4	4	5
Unoccupied Child	3	5	6	4	5	5
Discipline	1	2	0	0	1	2
USE OF MATERIALS						
Textbook	24	38	13	16	19	29
Workbook, Worksheet, Paper	45	26	56	30	51	28
Test	3	7	3	8	3	7
Games/Manipulative Materials	0	0	0	0	0	0
Reading or Math Kit	0	0	2	4	1	3
AV Equipment, Calculators, Learning Machine	0	0	0	0	0	0
Overhead Chalkboard	6	14	17	27	11	21
Non-curricular Material	6	13	3	6	4	10
No Materials	17	17	7	7	12	14

TABLE P.24 Percent of Student Time by Size of Groupings and Interactions for RENP, NON-RENP and Total Samples -- Grade 8

	RENP (N=6)		NON-RENP (N=6)		TOTAL (N=12)	
	Mean	SD	Mean	SD	Mean	SD
SIZE OF GROUPS						
One Student	7	7	12	10	9	9
Two Students	8	10	11	5	9	8
Small Group	19	13	31	17	25	16
Large Group	67	26	47	27	57	27
INTERACTION						
Interaction	54	19	65	11	60	16
Noninteraction	46	20	36	11	41	16
TEACHER BEHAVIOR						
Directing Children in Activity	47	15	45	17	46	15
Not Present--Used with no Interaction	53	15	56	17	55	15
SIZE OF GROUPS PLUS INTERACTION WITH TEACHER/STUDENT						
Noninteraction--Students Working Independently	42	18	36	11	39	14
One Student	5	6	10	9	8	8
Two Students	6	9	2	2	4	7
Small Group	11	9	15	11	13	10
Large Group	20	13	10	12	15	13
Interaction--Students Working Independently	11	14	21	14	17	14
One Student	0	0	0	0	0	0
Two Students	1	2	9	6	5	6
Small Group	6	7	9	9	7	8
Large Group	5	8	3	8	4	8
Interaction With Teacher	47	15	45	17	46	15
One Student	2	1	2	1	2	1
Two Students	1	2	1	2	1	1
Small Group	3	2	8	7	5	6
Large Group	42	18	34	20	38	19

APPENDIX Q

COST METHODOLOGY

Extracted From

RMC Research Corporation

Report UR-322, 1977

Appendix Q

COST METHODOLOGY

THE RESOURCE APPROACH TO COST ANALYSIS

The cost of an educational program can be estimated in several ways. One could, for example, examine the latest budget and use the "bottom-line" figure. Or, one could look at the latest expenditure figures and annualize them to a full year. Or, one could construct a detailed analysis of the resources used in the program, apply prices to the resources, and generate cost estimates based on these quantities and prices. Generally, we have taken the latter approach, although in some instances we have used budgetary expenditure data.

Budgetary data are usually inappropriate for program evaluation. In the case of this study, several anomalies were present in the budgets:

- Because the program is terminating, certain personnel were retained for only 11 months of the budget period while other personnel were retained for 13.
- The budgetary data were insufficiently detailed to allow us to examine the effect of different salaries, different assumptions about vacancy rates, and subdivisions of the line items.
- The materials budgets include costs for equipment bought in the budgeted year. These numbers are extremely unstable. For example, the RENP reading materials budget was $12,000, while the mathematics budget was only $5,000. Nevertheless, the mathematics laboratories, with inherited materials purchased in previous years, are better supplied than the reading laboratories.
- Budgetary data are difficult to use when making inter-LEA comparisons because of differences in line-item definition and other accounting practices.

- Certain line items were not intrinsic program costs. For example, a $35,000 item to pay off accrued vacation time would not normally be as high if tight management control over vacation time were exercised and if the program were not terminating.

Budgetary data are useful in certain circumstances, however. In this report we have used budgetary data in lieu of a resource inventory for items like office supplies, laboratory supplies, travel, and similar items. These items basically have short useful lives; consequently, there is little problem with inherited resources. In the case of supplies, a great deal of effort would have been required to inventory the myriad items and to gather price information. Furthermore, the payoff for this effort seemed low, especially since our experience indicates that these inventories are quite unstable, reflecting the effects of batching of orders, late deliveries, uneven use, etc.

One feature of the resource approach to cost analysis is that it produces a quantified list of the resources used by a program. Not only is the resource list of interest to educators, it is also of particular importance to local decision-makers contemplating alternative programs. Because D.C. prices were used, the cost estimates presented in this report are of limited use to other LEA decision-makers when they are investigating the cost impact of an RENP program on their budgets. However, the availability of specific resource information, beyond simple cost estimates, permits them to develop cost estimates that accurately reflect what they will have to pay for various resources. In addition, it allows them to determine the availability of resources that are free or that will be provided regardless of whether the program is implemented.

Types of Costs Considered

The cost-estimating procedures used in this study were directed toward identifying the total cost of providing education in each school examined. Every effort was made to collect data on all personnel, facilities, equipment, materials, supplies, and services involved in the educational process in the sampled schools. Nevertheless, certain costs that DCPS must pay are only incidentally associated with either RENP or the services provided to children. Two prime examples are the administrative costs of operating the DCPS (payroll department, bookkeeping, supplies, and materials ordering department, etc.) and the costs of transporting children to and from school. Such activities, although essential for efficient operation, are not a direct part of the program. Including these costs in our examination would have greatly increased the complexity of the data collection without changing the results because both the experimental and control schools would have been equally affected. Therefore, such costs were excluded from the study; only those resources that directly affected the program were considered.

It was not possible to accurately estimate the DCPS's cost to provide the services excluded from this study because they were not examined. However, statistics published by NCES[1] indicate that administrative costs represent approximately 3.9 percent of total costs and transportation represents 3.1 percent of total costs, when averaged across the nation. Thus, it appears that the costs identified in this study represent between 90 and 93 percent of the total cost of the educational programs. The exclusion of these cost categories does not affect estimates of the differences between experimental and control schools. It should be noted that DCPS imposes an explicit 6.7 percent administrative burden on the RENP program, and this cost has been included.

Total Versus Incremental Costs

Education costs can be examined in two ways. The first is referred to as total cost, or the total value of all resources used to operate a program. All resources--regardless of when they were purchased or who paid for them--must be considered. These resources not only include those directly associated with the educational program, but also those that have some impact on a program even though they might be provided to all children in the LEA. All equipment used in the program has some value and should be included even if it was purchased in a previous year for another program. Services provided free of charge because they are either volunteered or paid for by other community agencies are also included.

---

[1] Statistics of State School Systems, 1971-72, National Center for Educational Statistics (NCES 75-153), 1975.

A second type of cost estimate is the incremental cost of the program. The incremental cost considers only the additional program resources that are not normally provided to classrooms. In a sense, the incremental cost measures the special resource requirements of implementing a program. All resources included in the incremental cost are also included in the total cost. Thus, the incremental cost is always less than the total cost of a program.

In evaluating alternative programs, the incremental cost is of most interest because it represents the additional resources required to implement a program. When faced with the decision about whether or not the program should be implemented, the LEA must consider how it will provide those additional resources. If they cannot be provided free (either inherited or volunteered), the LEA must find state or federal funding or increase its own budget to cover the additional cost.

Unit of Analysis

The classroom has been selected as the basic unit of analysis in this study, although sometimes costs will be expressed on a per pupil basis. The classroom was selected for several reasons:

(1) RENP is oriented toward teachers; for the sample drawn, teachers and classrooms are equivalent.

(2) The analysis methods employed in this study were insensitive to variations in the resource levels applied to pupils within the same class. Even if costs were expressed on a per pupil basis, this number would not vary between pupils in the same class. Thus, no information is lost by using a per class measure.

(3) Other studies of compensatory education costs have used the classroom as the unit of analysis.[1,2]

Base-Year Prices

The prices presented in this report represent the best estimates for the 1976 school year. Considering the rapid increase in prices arising from inflation in recent years, these price estimates are not appropriate

---

[1] D. Rogers and D. Flynn, et al., A Cost Analysis of Follow Through Projects (Bethesda, Maryland: RMC Research Corporation, 1977).

[2] P. Dienemann, et al., An Evaluation of the Cost Effectiveness of Alternative Compensatory Reading Programs (Bethesda, Maryland: RMC Research Corporation, 1974).

for prior years. Likewise, it is reasonable to assume that, if no reduction is made in the quantity of resources employed in RENP, the prices in future years will be higher than those reported here. However, applying inflation factors to the study results should produce reasonably accurate cost estimates in the future.

THE COST MODEL

Resources that support RENP and DCPS programs are available in many places besides the classroom. These resources include RENP administration, school administration, personnel shared by classes, RENP laboratories, etc. To calculate a summary cost per class figure for each class, it is necessary to determine what portion of a resource benefits an individual classroom. The determination of these portions is called an allocation procedure. It is the basic structure of a cost model.

Allocation Procedures

We have structured the allocation rules according to resource type. Resources are either (1) RENP-provided resources, or (2) resources provided from other sources. The following rules are default conditions--that is, they basically describe how we allocated a resource when we could not gather information on its actual allocation. For example, an instructional aide was allocated evenly among the classes served by the laboratory unless unequal support levels were indicated. Although we did not ask each of the several hundred people how they spent their time, we did ask key individuals (component heads, facilitators, principals) who would be expected to know of any special allocations.

RENP Resources

RENP resources can be found at the administrative headquarters, at school-based laboratories, and in the person of community-based organizers. Four administrative activities take place at the administrative headquarters: general management, reading component management, mathematics component management, and parent/community involvement management. General management includes DCPS overhead charges.

Rule 1: Allocate general management costs equally among the three functional components.

Adding in the prorated general management charges to the component management charges yields the gross management cost for each component.

Rule 2: Allocate gross component management costs equally among the laboratories (organizers) of the component.

RENP administrative personnel confirmed that this was a reasonable procedure. Each laboratory's (organizer's) share of the component management costs plus the costs directly associated with the laboratory (organizer) yield the total laboratory (organizer) cost. Many of the tables in this report are presented at this level.

Rule 3: Divide laboratory costs equally among the teachers served by the laboratory.

This yields the cost per class of RENP-provided resources.

Because their clientele includes parents, students, teachers, and the community, it is difficult to tie the work of community organizers to classroom teachers. Nevertheless, it is useful to do so, and a reasonable method is available.

Rule 4: Divide the total organizer costs between the two laboratories the organizer is associated with, and then among the teachers served by each laboratory.

These four rules allow one to examine costs in a number of ways and at a number of analytical levels.

Other Resources

Other resources can be classified as (1) located in the classroom, (2) shared by classrooms, or (3) shared between classrooms and between schools.

Rule 5: Classroom costs are not allocated.

Rule 6: Resources shared between schools (generally personnel) are allocated in proportion to the amount of time spent in each school.

Rule 7: Resources shared by classes are allocated uniformly among the classes served unless otherwise indicated.

We are not interested in every resource in the schools--only in the resources used by or affecting the sampled classrooms. For example, if we have a fourth-grade classroom in our sample and there is a reading teacher serving only grades 1 to 3, then that teacher is ignored.

Problems with Junior High Schools

Junior high schools present quite difficult cost analysis questions. Unlike the elementary school classes in the sample, the junior high homerooms are together for only one period of the day. The distinction between RENP and non-RENP students is not really meaningful because students from RENP homerooms are taught by non-RENP teachers and vice versa. In addition, from a resource perspective, each student in a homeroon receives a different mix of resources, depending on the student's courses. For example, one student in a homeroom might benefit from the extensive resources of a science laboratory, but another might not.

We have used the number of homerooms in the junior high school as the number of classes in that school. Additionally, we have assumed that each homeroom is taught by one teacher. School personnel remaining after eliminating teachers assigned to homerooms are allocated uniformly among the classes. Audio-visual equipment and office equipment are allocated similarly. Items such as science laboratory equipment, shop equipment, music equipment, and classroom materials are not considered.

These adjustments, although crude, do not severely affect the analysis. The primary result is that (1) we will tend to understate costs at junior highs more that at elementary schools; and (2) we cannot differentiate the cost of classes within a junior high school. Nevertheless, the procedure introduces no apparent biases into our sample because it affects RENP and control schools equally. Furthermore, these comments do not apply to RENP-provided resources. Both the RENP resource inventory and its target teachers are well-defined in the junior high schools.

Unit Costs

For all elements of the RENP program, costs can be categorized as either:

- capital investments, or
- annual operating expenses.

Capital investments are the one-time expenditures needed to initially implement a program. They include costs for new facilities, equipment, materials, and extraordinary staff training. If a program is totally new, the capital costs might also include one-time expenditures for program design and development of materials.

By contrast, annual operating expenses are the costs incurred each year to operate and maintain a program. They include expenses for salaries, in-service training, materials and supplies, equipment maintenance, facilities operations and maintenance, and other services related to the program. These two broad categories of cost--capital investment and annual operating--are used as the basis for organizing the cost elements.

Treatment of Capital Costs

The primary distinction between capital and operating costs is the length of time benefits are derived from each type of expenditure. Capital resources last many years, while annual expenditures buy resources that are consumed in less than a year. To facilitate making cost comparisons, we need to annualize the capital investment pattern.

The best procedure for making the two costs comparable is to convert the capital investment costs into a series of uniform annual expenditures. Capital costs are amortized over their useful lives by using the following formula:

$$\text{Equivalent Annual Cost} = \text{Resource Price} \times \text{Capital Recovery Factor},$$

where

CRF = $i(1+i)^n/[(1+i)^n - 1]$,

n = useful life, and

i = discount rate.

The annualized capital costs computed in this manner can be combined with the other annual operating expenses to give total annualized program costs. The advantages of amortized costs, however, must be weighed against the need to estimate useful lives and discount rates.

It must be remembered that there are annual operating cost expenditures associated with capital resources. Examples of these operating expenses include costs of operating facilities, maintenance and repair expenses of facilities and equipment, as well as the purchase of replacements and spare parts.

Facilities

We were unable to gather accurate estimates of the cost per square foot of classroom space in the D.C. Public Schools. For the purposes of this report, we are relying on data gathered by RMC in 1975 on construction costs in the Montgomery County, Maryland, school system. Because the two school jurisdictions are adjacent, it is reasonable to expect that they are faced with approximately the same costs for construction. Thus, the Montgomery County estimates should be applicable to the DCPS.

The Montgomery County school system keeps quite detailed records on the construction and utilities costs for each of its schools. We obtained access to this information and analyzed the construction costs of two newly constructed elementary schools. Construction costs--including architectural fees, site development, and building construction--amounted to $40.55 per square foot. This per-square-foot cost did not include the cost of land or the cost of furniture or equipment included in the builder's fee. These two costs were omitted because the life of land is infinite--it does not depreciate--and because the cost for furniture and equipment is dealt with elsewhere in this report.

An additional aspect of space cost is that not all of the available space is actually used for instructional purposes. Substantial amounts of space are required for storage, toilets, corridors, lobbies, and mechanical equipment. Using the data collected from Montgomery County and our judgment about the amount of direct support space, we estimated that 25 percent of the square footage was used for support purposes. By allocating the cost of this 25 percent over the classroom space, we arrived at a total cost of $54.07 per square foot of classroom space.

Annual operating costs for Montgomery County schools include the cost of utilities, the cost of custodial services, and the costs of security and operations and maintenance. An analysis of 10 elementary schools in Montgomery County showed these costs to be $1.60 per gross square foot. After reallocating support space, we arrived at a figure of $2.46 per square foot for the annual operating costs of facilities space.

We assume that the life of a school is 50 years and the discount rate is 7 percent.

The following prices resulted:

- $54.07 per net square foot for construction costs or capital costs.
- $2.46 per net square foot for annual operating costs.
- $6.38 per net square foot for total annualized costs.

The prices described above are based on 1975 data. Because of inflationary effects, we have inflated these costs by 14 percent, corresponding roughly to increases of 8 percent in 1975 and 6 percent in 1976. The resultant figures are:

- $61.84 per net square foot (capital costs).
- $2.80 per net square foot (operating expenses).
- $7.27 per net square foot (total annualized costs).

Classroom sizes average about 30 feet by 30 feet.[1] And the RENP laboratories are located in dedicated classrooms. Consequently, the space costs for RENP laboratories, experimental, and control classrooms is:

$7.27 x 900 = $6,543/room/year.

This analysis applies only to owned facilities. Rented facilities, such as the RENP offices, are costed at the annual rent plus maintenance and utilities.

---

[1] This was the standard classroom size used in A Cost Analysis of Follow Through Projects.

Furniture and Fixtures

Several methods were used to determine the capital costs of furniture and furnishings. In general, we sought to determine costs that reflected the prices DCPS pays and that were as current as possible.

The first source of price information was an untitled memorandum produced by the DCPS Budget Department that listed actual prices for a large number of furniture, fixtures, and equipment items. If an item was not on that list, several sources were consulted, depending on the nature of the item. The sources included 1977 office supply catalogs from local firms,[1,2] a directory of audio-visual equipment,[3] a three-volume analysis of office systems,[4] and previous RMC studies.[5,6]

Table Q.1 displays selected resources, estimated prices, estimated life spans, and annualized costs. A 7 percent discount rate is assumed.

Equipment

Unit prices for equipment items were developed in a manner similar to the one used for developing the unit prices of furniture items. The life, capital investment cost, annual operating cost, and total annualized cost were determined for each equipment item and are displayed in Table Q. 2. The annual operating costs for equipment items consist primarily of maintenance costs. Maintenance costs for equipment items were assigned based on a percentage of the capital investment costs. Three somewhat arbitrary categories of maintenance requirements were used for analytical convenience. Equipment items requiring no maintenance at all were given an annual operating cost of $0.00; equipment items requiring limited

---

1. Ginn's 1977 Office Supply Catalog, Washington, D.C.

2. Delta Office Supplies 1977 Catalog, Gaithersburg, Maryland.

3 The Audio-Visual Directory 1976-1977 (Fairfax, Virginia: National Audio-Visual Association, 1977).

4. N.J. Delran, Office Systems, Vols. I, II, and III.

5. N. Al-Salam, et al., Evaluation of the Field Test of Project Information Packages, Vol. III: Resource Cost Analysis (Bethesda, Maryland: RMC Research Corporation, 1975).

6. A Cost Analysis of Follow Through Projects.

Table Q.1

STANDARDIZED COSTS FOR FURNITURE AND FIXTURES

Furniture and Fixtures	Life (years)	Capital Investment Cost (dollars)	Total Annualized Cost (dollars)
REGULAR			
Adult Chair	20	55.00	5.19
Professional Desk	20	230.00	21.62
Student Desk and Chair	10	28.80	4.09
Tables	20	34.00	3.20
Chairs	15	8.00	.88
File Drawers	15	30.89	3.39
Bulletin Board	20	72.91	6.85
Cabinet	20	110.00	10.34
Blackboard	20	65.67	6.17
Typing Stand	10	70.00	9.94
Map Display	10	50.00	7.12
Partition	10	160.00	22.72
Portable Stairs	20	100.00	9.44

Table Q.2

ANNUALIZED EQUIPMENT COSTS

Equipment Type	Life (years)	Capital Investment Cost (dollars)	Annual Operating Cost (dollars)	Total Annual Costs (dollars)
OFFICE				
Calculator	5	233.00	11.65	68.50
Coffee Machine	3	40.00	0.50	15.24
Dictaphone	10	400.00	20.00	76.80
Lecturn	10	137.00	6.85	26.30
Typewriter: Selectric	10	900.00	45.00	172.80
Royal Electric	10	500.00	25.00	96.00
PRODUCTION OF MATERIALS				
Ditto Machine	5	350.00	17.50	102.90
Duplicating Machine	5	485.00	24.25	142.59
Mimeograph	5	700.00	35.00	205.80
3M Thermofax	10	450.00	22.50	86.40
3M 209 Autocopier	10	2,070.00	103.50	397.44
Transparency Maker	5	400.00	20.00	117.60
Typewriter (primary)	10	275.00	13.75	52.80
Drymount Press	15	211.00	10.50	33.77
Photoflat Weight	20	19.00	0.00	1.79
Paper Cutter	20	17.00	0.00	1.60
SOUND AND SOUND PRODUCTION				
Cassette Player	5	59.00	2.95	17.35
Cassette Player/Recorder	5	85.00	4.25	24.99
Reel to Reel Recorder	10	227.00	34.05	66.48
Record Player	10	62.00	3.10	11.90
Listening Center (10 station)	5	65.00	3.25	19.11
Phono Radio Cassette	5	320.00	16.00	94.08
Stereo Radio	10	80.00	4.00	15.36
Tape/Synch-Mixer	10	68.00	3.40	13.07
Amplifier-Mixer	10	29.00	1.45	5.57
Bulk Tape Eraser	15	14.00	0.00	1.54
VIEWER AND PROJECTION				
Slide Projector	10	87.00	13.05	25.40
Overhead Projector	10	137.00	6.05	26.30
Opaque Projector	10	385.00	19.25	73.92
Filmstrip Projector	10	87.00	4.35	16.70
Filmstrip Viewer	10	27.00	1.35	4.32
Filmloop Projector	5	130.00	6.50	38.22
Movie Screen	10	40.00	0.00	5.68
Microfilm Reader	10	211.00	10.55	40.51
SOUND AND VISUAL				
Cassette/Filmstrip Projector	5	245.00	36.75	96.53
Spellbinder	-	--	0.00	--
Sound/Filmstrip Viewer	5	211.00	31.65	83.13
16MM Projector	10	750.00	37.50	144.00
Television	5	117.00	5.85	34.40
Video Tape Equipment	10	2,900.00	145.00	556.80
PHOTOGRAPHIC				
Camera: Super 8	5	388.00	19.40	114.07
Instamatic	3	40.00	0.00	15.24
Tripod	10	57.00	0.00	8.09
Ektographic Visual Maker	5	125.00	0.00	30.50
SPECIAL READING MACHINES				
Language Master	10	268.00	13.40	51.46
Controlled Reader	5	279.00	41.85	109.93
Tach-X	10	245.00	12.25	47.04
Audio Card Reader	5	217.00	32.55	85.50
Hoffman Machine	5	445.00	66.75	175.33
Singer Readermate	10	171.00	25.65	49.93
Voxcom	10	137.00	20.55	40.04
Timers	1	9.00	0.00	9.00
SPECIAL MATH AND OTHER INSTRUCTIONAL				
Calculator	5	36.00	1.80	10.58
System 80	5	500.00	25.00	147.00
Tutor Computer	10	1,368.00	68.40	262.57
Mathiputer	5	285.00	14.25	83.79
Telebinocular	10	382.00	19.10	73.34

maintenance were assigned an annual operating cost of 5 percent of their capital investment costs; and equipment items requiring substantial maintenance were given an annual operating cost equal to 15 percent of their capital investment costs.

Total annualized costs for equipment items were equal to the sum of the capital investment costs amortized over the life of the equipment at an annual interest rate of 7 percent plus the annual operating costs.

Materials

Three classes of materials were identified in this study: library books, textbooks, and kits. We used a 10-year depreciation schedule and a 7 percent discount rate for materials. We assumed zero maintenance costs for books and a 5 percent maintenance cost for kits. We used current kit prices; for textbooks, we used an average price based on previous cost studies.[1] Table Q.3 summarizes the costs derived.

Personnel

Estimating total annual salaries for various types of personnel is much simpler in the RENP study than in other compensatory education cost analyses. This is because a single set of job classifications is in force--there is no worry that the same function at two schools is performed by personnel with different job titles. Accordingly, we used the job titles observed in our field work. The job titles and total annual compensation figures used are shown in Table Q.4.

For RENP employees, each job is associated with a particular grade and salary schedule. We used the most recently computed average annual salary, including the benefits for that grade and schedule (from DCPS Budget Department information).

For other personnel except classroom teachers, we computed an average salary from the DCPS FY 78 budget. This procedure covered 95 percent of the job classifications. Salary information for health personnel (MDs, dentists) was derived from RMC's cost analysis of Follow Through projects.

---

[1] A Cost Analysis of Follow Through Projects.

Table Q.4

MATERIALS COST

Resource	Annualized Cost (dollars)
Textbooks	0.72
Library Books	0.50
Kits	18,23
Workbooks	2.42
Cuisanaire Rods	17.09

Table Q.4

FULL ANNUAL SALARIES BY JOB CLASSIFICATION

Title	Cost (dollars)
RENP PERSONNEL	
Director (TSA-5)	30,173
Assistant Directors--Reading, Mathematics (TSA-8)	25,354
Assistant Director, Management (GS-12)	24,578
Parent/Community Involvement Programs Assistants--Reading, Mathematics (TSA-10)	23,843
Facilitators--Evaluation (TSA-10)	23,843
Resource Coordinator--Public Information (GS-11)	20,607
Administrative Assistant for Personnel (GS-7)	14,437
Account Clerk	
Program Assistant, Parent/Community Involvement	
Secretary to Director (GS-6)	13,532
Administrative Assistant, Parent/Community Involvement	
Office Services Supervisor (GS-5)	11,602
Community Relations Specialist	
Secretaries	
Community Organizers	
Institutional Aides (GS-4)	9,731
Receptionist (GS-3)	8,950
Machine Operator	
OTHER PERSONNEL	
Classroom Teachers	(see schedule)
Teacher Aide	9,731
Parent Volunteer	9,731
Other Volunteer	9,731
Mathematics Specialist	16,333
Reading Specialist	17,656
Librarian	17,747
Clerk/Tester	9,785
Staff Developer/Site Coordinator	22,330
Secretary	9,837
Principal	27,292
Assistant Principal	24,081
Physician	41,500
Psychologist	17,624
Psychometrist	17,844
Psychiatrist	41,500
Hearing Therapist	17,844
Dentist	41,500
Optometrist	41,500
Nurse	15,974
Dental Hygienist	15,974
Nutritionist	15,974
Attendance Officer	17,844
Other Teachers	17,312
Social Worker	17,594
Speech Therapist	17,844
Guidance Counselor	17,747
Non-Instructional Aide	9,731

For classroom teachers, we used individual annual compensation. These salaries are based on education and years of experience. The salary schedule used is shown in Table Q.5.

Table Q.5

CLASSROOM TEACHER SALARY SCHEDULE
(dollars)

	Years of Service													
	Less than 1	2	3	4	5	6	7	8	9	10	11	12	13	More than 14
TSA-15														
Group A, Bachelor's Degree	10,536	10,955	11,374	11,793	12,311	12,630	13,160	13,690	14,220	14,750	15,280	15,810	16,340	17,612
Group A-1, Bachelor's + 15	11,061	11,480	11,899	12,317	12,736	13,155	13,685	14,215	14,745	15,275	15,805	16,335	16,865	18,667
Group B, Bachelor's +30, MA	11,591	12,121	12,651	13,181	13.711	14,241	14,898	15,556	16,213	16,870	17,527	18,184	18,842	20,553
Group C, Master's Degree + 30	12,121	12,651	13,181	13,711	14,241	14,771	15,428	16,086	16,743	17,400	18,057	18,714	19,372	21,094
Group D, Master's + 60, Doctor's	12,651	13,181	13,711	14,241	14,771	15,301	15,958	16,616	17,273	17,950	18,587	19,244	19,902	21,783

SAMPLE AND DATA COLLECTION

SAMPLE

The sample was selected by the DCPS Division of Research and Evaluation. Drawn entirely from the Anacostia Project Schools, it comprised ten experimental elementary schools, an experimental junior high school, eight control elementary schools, and a control junior high school. Within each elementary school, one or more classes in grades 4 to 6 were included in the sample. The junior high classes were all from grade 8.

DATA COLLECTION

Five data collection guides were developed for the study. They dealt with:

- RENP reading,
- RENP mathematics,
- RENP parent/community involvement,
- RENP office/administration, and
- the schools and classrooms in the sample.

A primary interviewee was identified for each guide. It was the component director in reading and mathematics; the RENP director in parent/community involvement and office/administration (the parent/community involvement director position was vacant), and the principal in each school. In addition to the primary interview, other interviews were conducted to provide data that the primary interviewee was unable to supply accurately. When costing the reading and mathematics components, RMC field workers visited the laboratories and spoke with facilitators and aides. At the schools, RMC often interviewed classroom teachers. At RENP, information was supplied by many people.

In addition to the data collected through RMC's interviews, a great deal of information was compiled from other sources. This information included budgetary, contractual, and expenditure data from NIE, many analyses conducted by the DCPS Division of Research and Evaluation, and a great deal of budgetary data from the DCPS Budgetary Department. Finally, RENP supplied many past quarterly reports, as well as current expenditure, inventory, and budgetary information.

Nonresponse was not a significant problem in this study. In general, RMC interviewers received excellent cooperation from the primary and secondary interviewees. There were, however, isolated problems:

- One control elementary school principal would not cooperate--no data from that school has been used in this analysis. It poses no apparent problem to our analysis.

- There were several instances of item nonresponse. The most significant type occurred when an interview in the school was conducted with the principal, but information regarding one or more sample classroom teachers was not provided. We observed no apparent pattern to this nonresponse, except that homeroom teacher information was not available for any of the sample teachers in the control junior high. We adjusted for this factor in our comparison of teacher salaries by not considering experimental teacher salaries in the average. Overall, we received classroom teacher information on 88 percent of the experimental teachers and 68 percent of the control teachers. Excluding the control junior high teachers, we received 94 percent of the control teacher information sought.

DATA COLLECTION GUIDES

(Reading, Math) Training Data Collection Guide
Parent/Community Involvement Data Collection Guide
School Data Collection Guide
Other RENP Resources Data (Management) Collection Guide

RENP COST ANALYSIS

(READING, MATH) TRAINING DATA COLLECTION GUIDE

Date of Interview:

Interviewer:

Title:

RMC Interviewer:

Place of Interview:

Telephone:

1.1 Schools in Program

School Name	Number of Classes					Number of Students					Involved in	
	4	5	6	7	8	4	5	6	7	8	Reading	Math

2.1 Teacher trainers.

Name	School(s)	R or M	Hours/Week	Paid by	
				RENP	Other

2.2 What is the average annual salary of teacher trainers?

$__________, Grade/Schedule __________

2.3 Are there enough trainers?

_____Yes _____No

If no, how many are desirable?

____

Comment: ____

____

3.1 Aide trainers.

Name	School(s)	R or M	Hours/Week	Paid by	
				RENP	Other

3.2 What is the average annual salary for aide trainers?

$ ________

3.3 Are there enough aide trainers?

_____Yes _____No

If no, how many are desirable?

____

Comment: ____

____

4.1 Aides.

Names	School(s)	R or M	Hours/Week	Paid by	
				RENP	Other

4.2 What is the average annual salary for aides?

$ ________

4.3 Are there enough aides?

______Yes ______No

If no, how many are desirable?

____

Comment: ____

____

5.1 Do you employ outside consultants?

______Yes ______No

If yes, who are they and what do they do?

Consultant	Role	Pay Rate	Utilization to date	School(s) served	Paid by	
					RENP	Other

5.2 Would you like to increase your use of consultants?

_____Yes _____No

If yes, what types of consultants would you add or increase and how and where would you use them?

_____

_____

_____

5.3 What is your budget for consultants?

$_____

6.1 What is the supplies/materials budget for trainers?

$_____

6.2 Are any supplies provided by other sources?

_____Yes _____No

If yes, please describe.

_____

_____

6.3 Is the budget adequate?

_____Yes _____No

If no, how much would be adequate?

$_____

7.1 What are the types and quantities of equipment utilized exclusively by trainers?

Type number	Number of pieces	Provided by RENP	Provided by other sources	Number of additional pieces desired

7.2 Is there enough equipment? (Indicate above.)

7.3 Are there other types of equipment which would be desirable?

Equipment	Number desired

8.1 Please discuss delays associated with hiring personnel or procuring supplies or equipment.

	Typical delay (weeks)	
	Minimum	Maximum
Supplies		
Equipment		
People		
Other		

8.2 Are these delays significant?

_____Yes _____No

If yes, what is the primary source of the delay?

____

____

____

8.3 Do any particular instances of delay stand out in your memory?

____

____

____

8.4 Discuss travel expenses.

Local budget ____

____

Out-of-town budget ____

____

9.1 What is the purpose of out-of-town travel?

9.2 On what is the local travel budget based?

9.3 Is it adequate?

______Yes ______No

If no, how much is needed, and why?

10.1 Are any training sessions held other than during school hours?

______Yes ______No

If yes, please describe training.

Training	Frequency	Attendees	Costs	Paid by	
				RENP	Other

11.1 Discuss any additional cost associated with the activity not covered above.

11.2 Discuss any changes which should be made in this activity.

RENP COST ANALYSIS

PARENT/COMMUNITY INVOLVEMENT DATA COLLECTION GUIDE

Date: ______________________________

Interviewer: ______________________________

Address: ______________________________

____

____

Phone: ______________________________

RMC Interviewer: ______________________________

1.1 List the schools involved in the parent/community involvement program and the parent organizers at each school:

School	Parent Organizer	Hours/ Week	Source of Funds						Grade/ Salary Schedule
			Volunteer	Local	RENP	Other	Federal	Other	

2.1 What is the average salary of a parent coordinator?

$________

2.2 Are there enough parent coordinators? How many are desirable? Are there other types of staff which would facilitate this program?

____

____

____

3.1 What is the RENP supplies/materials budget for this activity?

$________

3.2 Are supplies/materials provided by other sources?

______Yes ______No

If yes, by whom and how much?

____

____

3.3 Is there a separate supplies/materials budget for the PAC?

______Yes ______No

If yes, how large is it?

$________

3.4 Is the supplies/materials budget sufficient?

______Yes ______No

If no, how much should the budget be to optimally implement the program?

$________

4.1 What are the types and quantities of equipment utilized exclusively by the program? (Use attached list.) How much is useful and desirable?

Type Number	Quantity	Bought by		Amount Desired	Comment
		RENP	Other		

5.1 What is the local travel budget for this activity?

$________

5.2 What is the out-of-town travel budget for this activity?

$________

5.3 What portions of the travel costs are borne by RENP?

5.1 ________%

5.2 ________%

5.4 What type of travel is paid out of RENP funds?

5.1 ____

____

5.2 ____

____

6.1 Are there training costs for parent organizers?

______Yes ______No

If yes, discuss the specific training programs and any stipends, consultant fees, materials, etc., involved.

Date	Session	Trainees	Consultants	Stipends	Other

274

6.2 Is more training desirable?

______Yes ______No

If yes, what should be the training budget and what type of training is needed?

$________

____

____

7.1 Discuss any other individuals, resources, or costs associated with the RENP program.

____

____

____

____

____

RENP COST ANALYSIS

SCHOOL DATA COLLECTION GUIDE

School: ____________________

Address: ____________________
(Street)

____
(City) (State) (Zip)

Telephone: ( ) -

Principal: ____________________

People Interviewed:

Name	Title

Date: ____________________

RMC Interviewer: ____________________

5. Please list the consultants retained and their functions.

Name	Title	Cost

6. Discuss problems in hiring, supplies and materials acquisition.

6.1 What is the process?

6.2 What has been the experience?

6.3 What is the effect of the termination of NIE support?

1.1 What is the range of grades in this school?

From ______ to ______.

1.2 If there are kindergartens, are they half-day or full-day programs? How many classes of each type of program are there?

______ half-day ______ full-day

1.3 What is the distribution of RENP/non-RENP classes, by grade?

Grades / Classes	4	5	6	7	8	Other	Total
RENP							
non-RENP							

1.4 What is the distribution of RENP/non-RENP students (ADM) by grade?

Grades / Students	4	5	6	7	8	Other	Total
RENP							
non-RENP							

2. Discuss the average work-week at this school.

2.1 (a) For teachers: ______

2.2 (b) For aides: ______

2.3 (c) For administration: ______

2.4 (d) Other: ______

______

______

______

3.1 Discuss the full- or part-time staff not assigned to a particular classroom who support your school and the classes they support.

Name	Title	Hours/Week	Support All Classes?	Volunteer?	Source of Salary				Comment (if not all classes, indicate which ones)
					Local	RENP	Other Federal	Other	

3.2 Discuss the full or part-time staff who work exclusively in the following classes:

Room________

Room________

3.3.1 Grade:_____ Room:_____ Number of students:_______

School:____

3.3.2 How many years teaching experience does the teacher have?________

What is his/her highest degree?_________ Additional credits?_____

____

3.3.3 Please list all personnel including volunteers who work exclusively in _______________ class:

Person	Title	Hours/Week	Paid By:					Comments
			Volunteer	Local	RENP	Other Fed.	Other	

3.3.4 Is there adequate staff support? Yes_____ No______

Please give reason for response. For example, could you use more staff effectively? How many?

____

____

____

3.3.5 How many students in this class receive the following free or reduced price meals/snacks?

	Number	Dollars/Serving
Breakfast		
Lunch		
Snacks		

3.3.6 How many basic textbooks are used in this class?

Type	Number of Series	Number/Series	Total
Reading			
Math			
Other			

3.3.7 Are there adequate numbers of books? Yes_____ No______
Comment:____

3.3.8 How many field trips has this class taken this year?____________

3.3.9 How many more does it expect to take?____________

3.3.10 What would be the most significant changes that could be made to REMP to make it more effective? (Probe: What are resource implications?)

____

____

____

____

3.4 Please comment on how wellthe staff supporting your school meets the needs of your school. How would you change this support in terms of the level and mixture of skills and services provided? (Examples: Do you need more reading specialists, doctors? How many?)

____

____

____

____

3.5 What is the average annual compensation for each staff category described above? Respond only for those categories which you know accurately.

Category	Average Salary	Fringe Benefits (%)

4.1 What is the non-RENP supplies/materials budget for this school?

____

____

4.2 How are supplies/materials distributed? In particular, do RENP classes follow different procedures?

____

____

____

____

4.3 How, and to what extend does RENP provide supplies/materials to RENP classes?

_______________ Budget Size ($)

____

____

____

4.4 Do you consider the budget adequate? __________ If not, how much should it be? $______________

5.1 Is any other space, other than classrooms, used for RENP? For example, are rooms dedicated to the labs?

Yes________ No________

5.2 How much space? ___________ square feet

6.1 Please discuss equipment which is shared between all classes in the school. Was any of it purchased by RENP? (Use attached list)

Type Number	Number of Items	Number Purchased by RENP

6.2 Please discuss equipment which is shared only between RENP classes in the school. Was any of it purchased by RENP? (Use attached list) (Talk to facilitator if necessary)

Type Number	Number of Items	Number Purchased by RENP

6.3 Do you consider the inventory of equipment in your school to be adequate for your needs?

Yes________ No_________ Comment:________________________

____

____

7.1 Is there a library in the school? __________

How many books are in it?____________________

7.2 Is there a library exclusively for RENP students?__________

How many books are in it?__________________

8.1 How many series of basic textbooks are used in each RENP classroom? How many of each series does the typical RENP classroom have?

Average number/class:_______________ or

Average number/pupil:_______________

8.2 Were any basic textbooks purchased by RENP?

No________ Yes_________ How many?_________________

8.3 Are any other series of textbooks used by the RENP classes?

No________ Yes_________ How many series?_________________

What is the average number in each series?__________________

9.1 What is the average number of field trips taken by a RENP class in a year?______________

9.2 How many meals or snacks are served each day to RENP students?

	Number	Cost/Serving
Breakfast		
Lunch		
Snacks		

Comment? (Cost per meal)______________________________________

____

____

9.3 Are there any additional costs incurred by the school as a result of staff training of RENP teachers? Include consultant costs, travel expenses, per diems that would otherwise not be incurred, etc.

____

____

____

____

9.4 Discuss any additional cost associated with the RENP classes not covered above. Discuss any other changes in resources you would consider to better implement the RENP program.

____

____

____

____

____

Type of equipment

1 Listening Center
2 Language Master
3 Controller Reader
4 Tachistoscope
5 Audio Card Reader
6 Hoffman Machine
7 Singer Readermate
8 Systems 80
9 Primary Typewriter
10 Record Player
11 Cassette/Tape Recorder (Player)
12 Videotape Recorder
13 Slide Projector
14 Filmstrip Projector
15 Filmloop Projector
16 Cassette/Filmstrip Projector
17 Movie Projector
18 Overhead Projector
19 Opaque Projector
20 Projection Screen
21 Sound/Filmstrip Viewer
22 Television
23 Movie Camera
24 Still Camera
25 Ektographic Visual Maker
26 Drymount Press
27 Paper Cutter
28 Office Typewriter
29 Ditto Machine
30 Xerox Machine
31 Mimeograph Machine
32 Thermofax Machine
33 Transparency Maker

RENP COST ANALYSIS

OTHER RENP RESOURCES DATA (MANAGEMENT) COLLECTION GUIDE

1. Is the 11th Quarterly Report available? ____________________

2. Discuss the staff, other than the actual training staff or community organizers who provide support to RENP. Include the schools and classes each serves if it is not uniform. Are there enough of these management staff? How many positions and what positions are needed?

Months	Name	Title	Annual Grade/Salary	(FTE) hrs/wk	Paid by RENP Other	Component		
						R	M	P

3. RENP Budget--the RENP Budget showed these amounts:

____

____

____

____

3.1 Are they accurate? ___Yes ___No

3.2 Which items should be prorated in a 12-month budget?

____

____

____

____

3.3 Re: 4--was the office equipment purchased or leased?

___leased ___purchased

What is total monthly equipment leasing charges? ______________

3.4 Re: 6--who benefits from the training tuition?

____

4. Please list the equipment and facilities at the RENP headquarters.

Equipment Type	RENP-Owned Number of Items	Rented Number of Items	Rent	Supplied by DCPS	Dedicated to a Particular Component?